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CONTINUOUS CAUDAL ANALGESIA IN OBSTETRICS

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Continuous caudal analgesia was developed to relieve the pains of labor and delivery. Since its beginning [1] we have sought to improve our apparatus and refine our technic in order to provide the maximum of comfort for the mother with a minimum of risk for her and the baby.

Both Drs. J. B. De Lee and J. Whitridge Williams recognized that some obstetricians would literally follow the Biblical injunction "in sorrow shalt thou bring forth" but stated that it was the duty of the obstetrician to mitigate the sufferings of natural labor and delivery. They demanded that any amnesic, analgesic or anesthetic agent possess safety for mother and child.

Since 1847, when Sir James Y. Simpson introduced ether in obstetrics, there has been a continuous search for a perfect method. Many different agents, used either alone or in combinations, have been described for this purpose. Not one has been found that completely meets the postulated criteria without at the same time altering the normal mechanism of labor.

Sicard [2] and Cathelin, working independently, blocked the sacral and coccygeal nerves through the sacral hiatus. They found in 1901 that fluids when injected into the peridural space by this route rise to a height in direct proportion to the amount of preparation used and the speed with which it is forced into the canal. Cathelin further showed that when sufficient cocaine was injected into the sacral canal of the dog it resulted in complete anesthesia of the entire body.[3]

Laewen and Gaza in 1911 and Schlimpert [4] in 1913 used caudal anesthesia in Germany for obstetric cases. In America the technic has been used successfully by Meeker and Bonar in 1923; others followed: Oldham in 1925, Lundy in 1928, Henry and Jaur in 1929, Rucker in 1930, Campbell in 1935, Johnson in 1936 and Sword in 1936.[5] In 1939 Baptisti [6] reported the successful use of caudal anesthesia in 200 obstetric cases. Lahmann and Mietus [5] in January 1942 reported 400 obstetric cases in which caudal anesthesia was used.

These investigators confirm the practical usefulness of caudal block for delivery with comparative safety for both mother and child. Most of the writers cited described a satisfactory anesthesia resulting from an introduction of from 30 to 40 cc. of 1 or 2 per cent solution of procaine or metycaine into the extradural space of the sacral canal. Most found the duration of this anesthesia to be between forty minutes and an hour and a half.

We have sought to modify their methods so that the analgesia could be started in the early stages of labor to relieve the pain and discomfort for the parturient in this period with the added advantage of continuing this analgesia until the completion of labor and postpartum repair.

In a previous paper we wrote that we used this procedure in obstetrics only after it had been thoroughly studied in the management of twenty surgical operations on the perineum and lower extremities. We first used it in our surgical service, working with Southworth,[7] in October 1941 for a bilateral phlebectomy. Since that time we have managed the entire course of six hundred labors and deliveries with this method without resorting to any other form of anesthesia. We believe that continuous caudal analgesia has opened a new medical horizon to the profession comparable to that developed by Lemmon and Paschal [8] with continuous spinal anesthesia. However, we would emphasize that with our method the drug producing the analgesia is continuously bathing the nerve trunks of the sacral and lumbar plexuses within the peridural space. At no time does this medication enter the subdural space of the spinal canal. Consequently the patient is still able to move the lower extremities throughout labor, and uterine contractions continue without impediment.[9]

THE NERVE SUPPLY TO THE UTERUS

Our solution of the problem of the relief of pain during labor and delivery has been the use of a continuous regional nerve block of both the somatic and autonomic pathways which transmit the pain impulses. At the same time we have endeavored not to interfere with the motor nerve fibers to the uterus and the

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From the U. S. Marine Hospital, Staten Island, where Dr. Hingson is Chief of Anesthesia and Dr. Edwards Chief of Obstetrics.

1. Edwards, W. B., and Hingson, R. A.: Continuous Caudal Anesthesia in Obstetrics, Am. J. Surg. **57:** 459-464 (Sept.) 1942. Hingson and Southworth.[7]
2. Sicard, M. A.: Les injections médicamenteuses extra-durales par voie sacrococcygiènne, Compt. rend. Soc. de biol. **53:** 396, 1901.
3. Cathelin, M. F.: Une nouvelle d'injection rachidienne. Methode des injections epidurales par le procede du canal sacre. Applications à l'homme, Compt. rend. Soc. de biol. **53:** 452, 1901.
4. Schlimpert, Hans: Concerning Sacral Anesthesia, Surg., Gynec. & Obst. **16:** 488, 1913.
5. Lahmann, Albert H., and Mietus, A. C.: Caudal Anesthesia, Surg., Gynec. & Obst. **74:** 63-68 (Jan.) 1942.
6. Baptisti, Arthur, Jr.: Caudal Anesthesia in Obstetrics, Am. J. Obst. & Gynec. **38:** 642 (Oct.) 1939.
7. Hingson, R. A., and Southworth, J. L.: Continuous Caudal Anesthesia, Am. J. Surg. **58:** 93-96 (Jan.) 1943.
8. Lemmon, W. T., and Paschal, G. W., Jr.: Continuous Spinal Anesthesia with Observations on the First 500 Cases, Pennsylvania M. J. **44:** 975-980 (May) 1941.
9. Hingson, R. A., and Edwards, W. B.: Continuous Caudal Anesthesia During Labor and Delivery, Anesth. & Analg. **21:** 301-311 (Nov.-Dec.) 1942.

nerves to the accessory skeletal muscles which have a part in the voluntary expulsion of the baby. This we have designated continuous caudal analgesia.

Head [10] in 1893 postulated that the pain impulses of labor were transmitted through the lower thoracic and upper lumbar sympathetic ganglions. Cleland [11] in 1933 located these pathways in the human being by clinical observations following paravertebral sympathetic nerve block as coursing through the ganglions of the eleventh and twelfth thoracic segments. In more than 600 case studies we have substantiated these contentions. We have tested the level of skin analgesia in every patient receiving the caudal block. We have found that it is necessary to extend this level of analgesia up to and including the area supplied by the eleventh thoracic nerve and the iliohypogastric nerve on both sides before the patient has complete relief from labor pains. The superior extent of this area lies midway between the umbilicus and the pubis. Whenever the analgesia of the skin falls below this area on either side there is return of the sensations of abdominal cramps on that side, with the intensity increasing as the level of analgesia descends.

Sherrington, Head, De Lee, Rucker [12] and Cleland have contended that the motor nerve supply to the upper uterine segment arises from the upper thoracic sympathetic ganglions and courses in the fibers of the celiac, aortic, renal and hypogastric plexuses along the blood vessels to the uterus. These contentions have been substantiated by observations that women who have had high midthoracic traumatic sections of their spinal cords during pregnancy have continued the pregnancy and have gone into normal painless labor with spontaneous delivery. In our study of patients under continuous caudal analgesia we have found these postulates to coincide with our clinical observations. We have noticed that when the area of skin analgesia extends higher than the sixth thoracic segment the progress of labor with regard to frequency and force of the uterine contractions is delayed. So long as the area of analgesia is kept below the level of the umbilicus, the progress of labor with regard to frequency and strength of uterine contractions continues.

Components of Autonomic Nerve Supply to Uterus

1. Visceral efferent sympathetic (motor to upper uterine segment)	Upper thoracic and possibly lower cervical sympathetic ganglions and nerves coursing in the celiac, aortic, renal and hypogastric plexuses with possible reinforcement from nerve supply to the adnexa
2. Visceral afferent sympathetic (sensory to the uterus)	Eleventh and twelfth thoracic and possibly the first lumbar sympathetic ganglions and nerves
3. Visceral efferent and afferent parasympathetic (inhibitory to uterus, sensory and motor to the cervix, sensory to upper birth canal)	Second, third and fourth sacral nerves directly to the great cervical ganglion of Frankenhauser

The sympathetic components of the sacral nerves and ganglions probably also carry pain impulses from the cervix and vaginal vault and play a part in the mechanism of the dilatation of the cervix.

The nerve supply of the cervix and lower uterine segments is generally stated to course from the sacral sympathetic ganglions to the large cervical ganglions and directly through the parasympathetic fibers from the second, third and fourth sacral nerves. We believe that these fibers innervate the circular muscles of the cervix and lower uterine segment and that they carry pain fibers from these areas and the upper portion of the vaginal vault. There is some suggestion that they also carry inhibitory fibers to the uterus by innervating the longitudinal muscle fibers of this organ. Prolonged block of these nerves through continuous caudal analgesia produces definite softening of the cervix, with more rapid effacement of the lower uterine segment and cervical dilatation as determined by rectal examinations.

Thus from this clinical study it would appear that the autonomic nerve supply to the uterus may be divided into the components presented in the accompanying tabulation.

In substantiating this work on cadavers we studied the dissection made of the peridural space in sixty cadavers after 30 cc. of methylene blue solution had been injected through the sacral hiatus. We found that in no case did this injection go higher than the sixth thoracic segment but always as high as the tenth dorsal segment. In many of them we found the structures more intensely stained on one side and to a higher level than on the other.[13]

Thus our dosage tables were calculated both by neurologic studies on women in labor and by dissection studies on necropsy material. We sought to determine the required volume of solution necessary to reach the pain fibers without paralyzing other vital nervous functions.

THE MANAGEMENT OF LABOR AND DELIVERY

Continuous caudal analgesia is started when a patient is in labor and in distress. We advise that the procedure be not started until the patient is in actual distress. Best results are secured when the contractions are regular, of at least thirty seconds duration and five minutes or less apart. Often with only slight suggestion and encouragement a patient will not need much aid until she has 3 to 4 cm. dilatation. If the patient is in too severe pain, the procedure can be started earlier and absolute relief given.

Under this form of analgesia the patient is continued on her normal diet and fluid intake. Thus there is no interference in the normal metabolism of either mother or child.

It is imperative that the obstetrician have a complete evaluation of the case before the analgesia is started. He should know that there is no placenta previa, inertia uteri, uncontrollable hysteria or disproportion of child to pelvis. All these are extraordinary obstetric contraindications for the use of the procedure.

We prefer to keep the patient in her own hospital room until time for delivery. She is in familiar surroundings and has her reading material, radio and visitors. Since the patient is not uncomfortable she often enjoys natural sleep and is able to conserve her energy.

An enema always precedes the administration of the analgesia unless the progress of labor is too rapid. Rectal examination gives satisfactory information without producing discomfort. Rectal examination is made with facility because of the relaxation of the anal sphincter.

Because of pronounced relaxation of the soft parts of the birth canal and outlet, progress is expedited. We have found it safe to leave the mother in bed until the presenting part can be seen by spreading the vulva.

10. Head, Henry: Pain in Visceral Disease, part 1, 1893, Brain xvi, 1.
11. Cleland, J. G. P.: Paravertebral Anesthesia in Obstetrics, Surg., Gynec. & Obst. **57**: 51-62 (July) 1933.
12. Rucker, M. Pierce: The Use of Novocaine in Obstetrics, Am. J. Obst. & Gynec. **9**: 35 (Jan.) 1925.
13. Vaux, Norris, and Lull, Clifford: A Study of the Peridural Space in Cadavers in the Jefferson University Medical School, unpublished data, Philadelphia, 1942.

The danger of precipitant birth is minimized as the distressing expulsive forces called into play due to pain are absent. The mother is taken to the delivery room with the apparatus in place. The perineum is prepared with tincture of green soap and an antiseptic. The patient is draped and delivery accomplished.

It has been our policy to use prophylactic episiotomy and outlet forceps. The application of forceps is facilitated by complete relaxation. In spontaneous delivery the presenting part gradually irons out the perineum, dilates the vulva and delivers. With either operative or spontaneous delivery, care must be used to protect the mouth and nose of the child as it crosses the perineum so that there will be no aspiration. The majority of babies breathe spontaneously, since there is no drug obtunding the vital mechanism of the baby. In our experience the delivery of a breech is greatly facilitated. The premature baby has a better than average chance, since it has been spared a severe dehydration period and excessive birth trauma due to resistance in the birth canal and outlet.

The third stage of labor is not prolonged and there is a noticeable decrease in blood loss. The contractile power of the uterus is not inhibited. When the patient is ready to return to her hospital bed the analgesia is discontinued.

TECHNIC FOR ADMINISTRATION

1. This method is definitely contraindicated for patients with gross deformities of the spine, particularly in the region of the sacrum; in local infection around the sacral hiatus, and for patients with a history of sensitivity to the analgesic agent.

2. The patient is placed in the modified left lateral Sims position. The sacral and coccygeal area is cleansed with soap and water and prepared with one of the antiseptic tinctures.

3. The tip of the coccyx is palpated with the middle finger of the left hand, and the thumb is used to find the U or V shaped notch indicating the sacral hiatus between the sacral cornua. This is usually about 1½ or 2 inches from the tip of the coccyx. In cases in which there was a failure of the inferior sacral arches to fuse into the bony roof of the sacrum, this hiatus may be 2½ to 4 inches from the inferior caudal tip. Experience with the standard single caudal injections is a desired prerequisite for success in the use of the continuous method.

4. The middle finger of the left hand then changes place with the thumb and marks the spot for raising the initial skin wheal.

5. A special apparatus, as illustrated in figure 2, has been developed for this procedure. The analgesic agent recommended by us is 1.5 per cent metycaine in isotonic solution of sodium chloride. Two Gm. of the drug diluted in approximately 125 cc. of a saline solution in the reservoir bottle will most nearly approach this concentration. With a few cubic centimeters of this solution skin anesthesia is obtained by raising a skin wheal with a 25 gage and deeper infiltration to the sacrococcygeal ligament with a 2 inch 22 gage needle.

6. The special malleable stainless steel 19 gage needle is then inserted in the midline in the direction of the hiatus at about a 45 degree angle with the skin.

7. As soon as the bevel of the needle pierces the sacrococcygeal ligament, its reinforced metal collar is depressed through an arc of 1 to 3 cm. and the needle is thrust slowly and evenly in the midline for 1 to 2 inches within the sacral canal, where its bevel should lie inferior to the lowest extent of the dural sac. This may be ascertained by measuring on the skin with the stilet the approximate extent of the needle. The point of the needle should always be below the level of the second sacral spine.

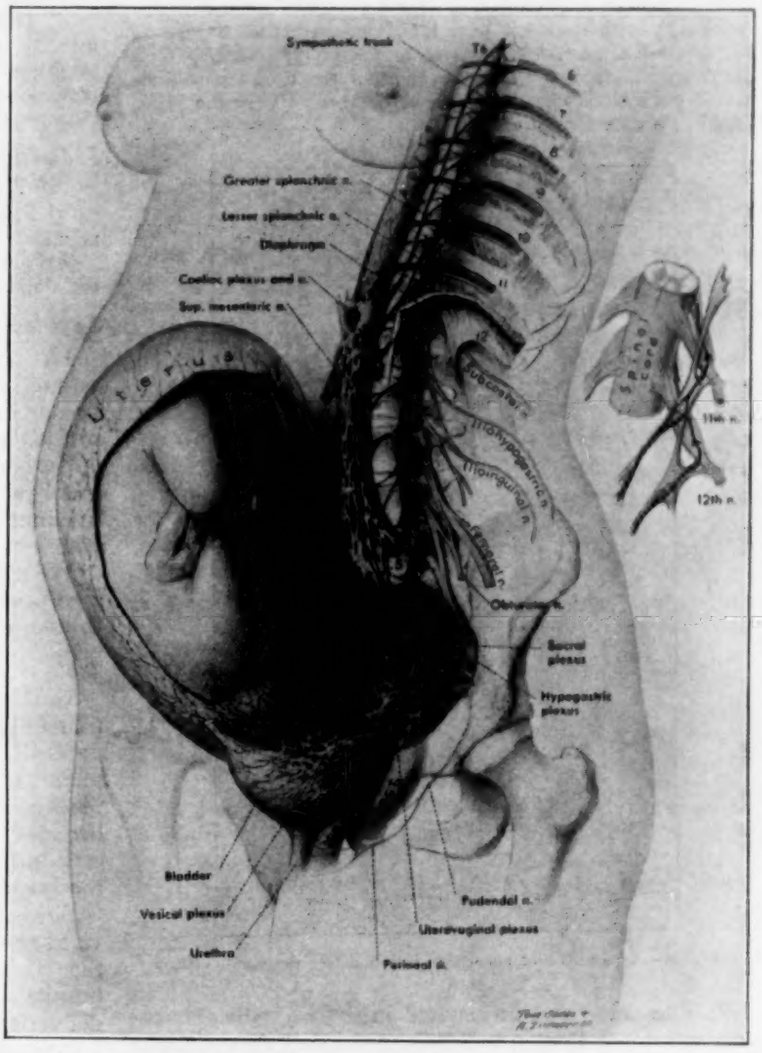

Fig. 1.—The innervation of the uterus and birth canal in pregnancy: The sensory nerve fibers of the uterus constitute visceral afferent fibers and are functionally independent of the autonomic nervous system although coursing through the pelvic, hypogastric and aortic plexuses before connecting with the dorsal root ganglions of the eleventh and twelfth thoracic nerves in which their nerve cells are located. The inset shows details of the connections. The sensory supply to the cervix and upper part of the vagina travels in the sacral parasympathetic nerves. It is also functionally independent of the autonomic system. The sensory and motor supply of the lower vagina, perineum and pelvic floor travels in the perineal and pudendal somatic nerves. The motor supply of the uterus is autonomic and involves both sympathetic and parasympathetic efferent components. Clinical evidence indicates that the motor fibers to the uterus leave the spinal cord at higher levels than the tenth thoracic nerve, whence they pass through the aortic, hypogastric and pelvic plexuses. Visceral efferent fibers believed to be motor to the circular muscle of the lower uterine segment and cervix and possibly inhibitory to the remainder of the uterus travel through the parasympathetic pelvic nerves. Clinical study verifies that (1) blocking the sacral nerve roots abolishes the pain of distention of the birth canal, paralyzes the skeletal muscle of the perineum and abolishes tone in the smooth muscle of the cervix; and (2) extending the block to include the eleventh thoracic root abolishes the pain of uterine contractions without impairing their force. It suggests that extending the block to the sixth thoracic nerve or higher may impair the strength of uterine contractions.

8. The small section of tubing with special adapter is then slipped over the collar of the needle. The Luer-Lok syringe is securely attached to the adapter. A careful aspiration is performed.

(*a*) Should clear spinal fluid be obtained, the needle has pierced the dura and lies within the subarachnoid space. In such event the needle should be immediately withdrawn and the case ruled unsuited for caudal analgesia for fear of producing a massive spinal injection of the analgesic drug. Anatomic anomalies with such low lying dura are rare. (In our experience this has happened only twice in more than one thousand injections.) A FAILURE TO RECOGNIZE THIS SITUATION WOULD BE EXTREMELY HAZARDOUS IF NOT FATAL.

(*b*) The withdrawal of pure blood indicates that the needle has pierced a small blood vessel in the highly vascular peridural space. In this event the point of the needle should be moved until blood can no longer be obtained. Then the injection is continued cautiously.

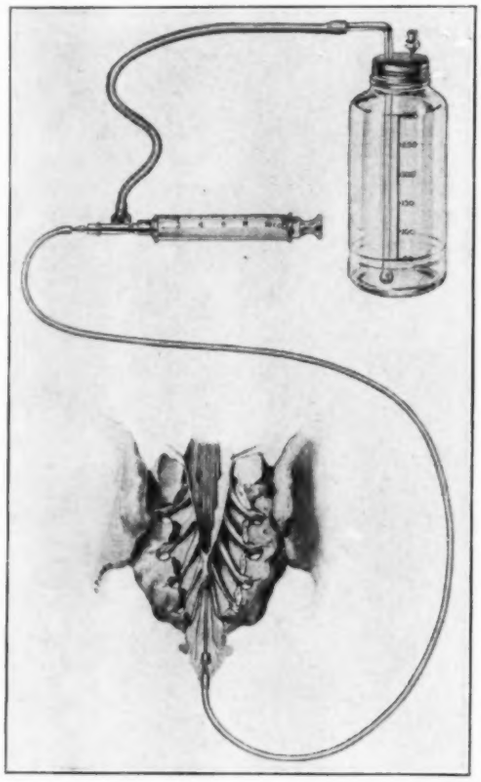

Fig. 2.—Apparatus and method of injection into the sacral area.

9. The danger of intraspinal injection, with appearance of spinal fluid previously mentioned (see 8) can be minimized if a trial dose of 8 cc. of the solution is injected, and further action delayed for ten minutes to see that a low spinal anesthetic does not ensue. Without relief of pain or loss of motor power in the lower extremities in ten minutes after injection, one can safely assume that the subarachnoid space was not entered.

10. After these precautions have been carried out, the hose end of the special 4 foot rubber tubing is secured over the collar of the special caudal needle. The tubing should previously have been connected to the remainder of the apparatus as illustrated in the diagram, all air having been expelled by filling the entire system with metycaine solution.

11. With the palm of the left hand firmly pressed over the skin area against the dorsum of the sacrum, 30 cc. of 1.5 per cent solution is slowly injected. (Epinephrine should not be used in obstetric cases, since it might produce a relaxation of the uterus.)

Indications That the Solution Is Being Injected into the Peridural Space of the Sacral Canal

(*a*) The patients usually experience a sense of fulness progressing to an uncomfortable sensation in one or both legs as the solution circumscribes the perineural components of the sciatic nerves. This sensation can be minimized by slower injection.

(*b*) There will be a progressive analgesia in the areas supplied by the coccygeal, hemorrhoidal, perineal, pudendal, ilioinguinal and iliohypogastric nerve. Analgesia should be complete in twenty minutes.

(*c*) There is relief of abdominal uterine cramps within five to fifteen minutes.

(*d*) Pronounced vasodilatation, cessation of sweating and increase in temperature of skin of feet will ensue within five to fifteen minutes after injection. This phenomenon is often noticed on one side several minutes before it occurs on the other.

Indications That the Solution Is Being Injected Outside the Sacral Canal

(*a*) Failure of the injection to relieve pain within thirty minutes.

(*b*) The appearance of an "injection tumor" superficial to the dorsum of the sacrum.

Supplementary Injections

12. The supplementary injection will depend on the rate of metabolism of the drug by the individual patient. In our experience 20 cc. of additional solution injected every thirty to forty minutes is sufficient to keep the parturient comfortable for the entire course of labor. We have continued our supplementary injections for a maximum of thirty hours and for an average of seven hours.

We consider this method of analgesia to be a specialized procedure which requires special training in order to attain uniform satisfactory results.

STATISTICAL SUMMARY

In the series of 100 cases of delivery handled by continuous caudal analgesia, the percentages were as follows in the U. S. Marine Hospital, Stapleton, N. Y.: primiparas 89 per cent, multiparas 11 per cent, cephalic 98 per cent, anterior 84 per cent, posterior 14 per cent, breech 2 per cent. In this series there were only 3 per cent unsatisfactory cases in which supplementary anesthesia was necessary.

Since Jan. 1, 1942 we have either managed or supervised the labor and delivery of 489 additional cases in the clinics of nineteen medical schools and teaching hospitals. In this group there were eleven breech deliveries, one set of twins and one cesarean section. Of this series 11 per cent obtained unsatisfactory analgesia, necessitating either discontinuance of the method or the addition of supplementary anesthesia. In many of these cases the technic was being practiced by residents who were learning the procedure.

In the entire series of 589 cases there were 586 live births with no maternal complications or deaths. The average length of time the analgesia was continued was six and one-half hours. The shortest was thirty-five minutes and the longest was thirty-three hours. The average metycaine dosage was 2.6 Gm. The maximum dosage given was 11 Gm.

In cases of toxic hypertension it was noted that after the analgesia had been in effect for about forty-five minutes the pressure reached a plateau which corresponded to their normal before they became toxic. This drop persisted until after delivery and in the cases observed did not return to the toxic peak. All the patients stated that they felt much better.

CONCLUSIONS

1. This method of analgesia in obstetrics embodies a comfortable and painless labor and delivery that is safe for mother and child.
2. The analgesia is accurately developed and controlled, utilizing specially developed apparatus and technic which overcome difficulties inherent in caudal anesthetics previously to their development.
3. The method can be started in any stage of labor and continued as long as necessary.
4. The vital mechanisms of the child are not obtunded.
5. Delivery of the child is expedited and facilitated.
6. The postdelivery complications, in our experience, are reduced.
7. This method involves a new analgesic technic which should be studied under those who have been trained in the method before it is employed in practice.
8. Obviously, the method depends also for its success on a high degree of obstetric competence, avoiding cases in which there are contraindications, avoiding meddlesome or hasty obstetric intervention and observing well established criteria for observation of the progress of the delivery.

CONTINUOUS CAUDAL ANESTHESIA IN OBSTETRICS

PRELIMINARY REPORT

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Continuous caudal anesthesia has a place in obstetrics. There are some dangers and contraindications to this method. Cautious but repeated experiences with the method are desirable to evaluate it. These preliminary observations with some of the advantages and disadvantages are presented in the hope that others interested in this field may become aware of our experience. In this series of 20 patients there were 3 failures; 1 of these presented a typical shock reaction.

TECHNIC

The same technic of administration was employed as originally described by Edwards and Hingson [1] with the precaution of waiting ten minutes after a test injection of 8 cc. (90 mg.) of a 1.5 per cent solution of metycaine (γ-[2-methylpiperidine]-propanol hydrochloride).[2] This caution was exercised to make certain that the solution did not enter the subarachnoid space. If signs of spinal anesthesia did not develop, the remainder of the initial 30 cc. dose (22 cc.) was injected and repeated as advised by Edwards and Hingson. One of us (T. G. G.) administered the anesthesia in this entire group.

RESULTS

In our series of 20 cases (summarized in the table) 14, or 70 per cent, were completely successful, 3 were satisfactory but not ideal, and 3 were classified as failures. Of the 14 cases in which continuous caudal anesthesia was used during labor and delivery, 10 were completely successful and 3 others were termed satisfactory. There was 1 failure. In the 10 completely successful cases absolute relief from all labor pains was achieved. The tired, drawn, tense appearance which was present prior to the injection disappeared. The patients became relaxed and much at ease. They were definitely pleased with the results.

In the table cases which were called satisfactory only partial relief from labor pains was obtained but the episiotomies and low forceps operations were carried out without pain. In 1 of these there was complete relief on one side with a persistence of painful sensation on the opposite side; in the other 2 it was assumed that the drug did not reach a high enough level in the epidural space to block all the uterine innervation.

Results of Continuous Caudal Anesthesia

	Total	Successful	Satisfactory	Failure
Vaginal deliveries	14	10	3	1
Postpartum abdominal sterilizations	2	2	0	0
Hysterotomy 18 weeks	1	1	0	0
Cesarean section	3	1	0	2

The two abdominal sterilizations done following labors were completed successfully without straining and without pain when the tubes were crushed or the peritoneum manipulated. Likewise the abdominal hysterotomy on an eighteen weeks pregnancy was successful; the abdominal wall incision and the evacuation of the uterus took place with complete freedom from pain or distress.

The anesthesia was started on 3 patients for cesarean section. In 1 of these there was insufficient anesthesia of the abdominal wall for incision. Further attempts to anesthetize were not attempted. In another case, that of a toxemia of the hypertensive type, good skin anesthesia was obtained to the level of the xiphoid but the patient's blood pressure fell from 190 systolic to an indeterminate level before any operative procedure was attempted. She responded in thirty minutes after the administration of ephedrine hypodermically and oxygen inhalations. No further attempt with caudal anesthesia was made on this patient. The third section was performed successfully by means of the continuous caudal method.

COMMENT

In analyzing the 3 failures, then, we find that in 1 there was good anesthesia but the failure resulted because the patient went into vascular collapse following the injection. In the other cases the exact cause of the failure is difficult to determine, possibly a technical difficulty or possibly an anatomic variation.

It has been observed that if the solution is injected with the patient on her side (instead of in the knee chest position) the most dependent side is the first to become anesthetized and that the level of anesthesia extends higher on the dependent side. In some cases it seemed possible to get a higher level of anesthesia by injecting with the patient in the Trendelenburg position. There seems to be a direct proportion between the amount of drug given in a single injection and the level of anesthesia on the abdominal wall and also between the force of injection and the level of anesthesia.

The longest continuous period over which the drug was administered was eight hours, the procedure usually being started when the cervical dilatation was 5 cm. or more. Practically all patients showed a drop in blood pressure from 10 to 30 points or more, the greater falls occurring in patients with some hypertension; 2 had a secondary rise in pressure to above the previous maximum when the anesthesia wore off.

A few minor side reactions besides blood pressure changes were encountered. Two patients complained of severe pains in the back and legs after the drug

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1. Edwards, W. B., and Hingson, R. A.: Continuous Caudal Anesthesia in Obstetrics, Am. J. Surg. **58**: 459 (Sept.) 1942.
2. Eli Lilly and Company furnished the metycaine used in this study.

wore off, 1 requiring morphine for relief. Neither had any sequela during the remainder of the puerperium. One patient with whom the anesthesia was successful complained of severe throbbing headache during the injection. This lasted for about three minutes and recurred with each subsequent injection, lasting the same length of time. Another patient complained of severe burning pain in the lower extremities beginning a few seconds after each injection and lasting about one minute. This was obviated by giving subsequent injections while anesthesia was still complete.

The method should be safe provided the anesthetic agent is injected extradurally. The epidural space is composed of loose, vascular, areolar tissue and in some places the space is much narrower than in others. It continues all the way to the foramen magnum; theoretically it would be possible to block the phrenic nerve, which receives its innervation from the second to the fifth cervical. However, this possibility is remote because of the pronounced discrepancy between motor and sensory loss. Motor loss is in most cases only partial even in the lower extremities. Therefore the danger of respiratory paralysis would seem to be less likely than in spinal anesthesia.

ADVANTAGES AND INDICATIONS

The continuous caudal method of anesthesia possesses advantages:

1. It is a useful form of nerve block anesthesia when a general anesthetic is contraindicated, as in pulmonary tuberculosis or upper respiratory infections.
2. The uterus appears not to relax and appears to maintain its normal motility and mechanism in contrast to its behavior under deep inhalation anesthesia.
3. Narcotics and sedatives are eliminated during the course of labor and delivery.
4. The procedure is a relatively simple one and seems safe for those skilled in this procedure.
5. At laparotomy (cesarean section) the peritoneum is not sensitive as it is when done under local anesthesia.
6. Patients in labor are calm, quiet, relaxed and rational.
7. It makes use of the principle of giving repeated amounts of a drug over a long period of time.

DISADVANTAGES AND CONTRAINDICATIONS

Some of the conditions which present themselves and which might be presumed to be disadvantageous and dangerous are:

1. The greatest danger would seem to be that of injecting this amount of drug into the subarachnoid space. The two safeguards are aspiration before injection and the injection of 8 cc. (90 mg.) for test of spinal anesthesia.
2. There is a loss of the subjective pain element as an aid to following the progress of labor.
3. When compared to the administration of a hypodermic or to oral routes of administration for analgesia during labor it can be seen that it is not a time saving procedure, since a skilled person must insert the needle and inject the medication at intervals of thirty minutes or longer. This requires the attention of a physician.
4. It either prolongs the second stage or increases the incidence of operative delivery, since the patient has absolutely no urge to bear down.
5. While this type of anesthesia has the advantage of providing a contracting uterus for normal labor and third stage, it is not the procedure of choice when a difficult forceps rotation or version is necessary, since here almost complete uterine relaxation is imperative.
6. Since 1 toxemic patient had a vasomotor or shock reaction, other toxemic or severe hypertensive patients have not been tested with this method.
7. It is assumed that the successful administration will increase from 70 per cent in the series of 20 patients to a distinctly more favorable rate as experience and judgment increase. It seems that an occasional failure is unavoidable because of the peculiar configuration of the sacrum.
8. The method does not give abdominal wall relaxation as compared to deep inhalation anesthesias.
9. That spinal anesthesia is contraindicated in cardiac patients with myocardial damage is a general belief, and the same may apply for continued caudal anesthesia.
10. At this time the procedure seems to be one exclusively for hospital usage because of the danger of complications.

It is our belief that in carefully supervised and selected cases continuous caudal anesthesia is a valuable addition to the field of obstetric analgesia and anesthesia, and our work with it is continuing.

MODERN TREATMENT OF PNEUMOCOCCIC PNEUMONIA

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LEON SCHWARTZ, M.D.
AND
ALBERT H. DOMM, M.D.
PHILADELPHIA

Within the past five years numerous clinical reports have established that sulfonamide therapy, properly conducted, is an effective form of treatment for pneumococcic pneumonia. It is appropriate at this time, therefore, to evaluate the comparative merits of the sulfonamide compounds which have been used in the treatment of pneumococcic pneumonia as well as to consider some of the more important problems concerned with their rational use. This report is based on experience with 1,635 cases of pneumococcic pneumonia of adults treated with sulfapyridine, sulfathiazole or sulfadiazine in the medical wards [1] of the Philadelphia General Hospital between Aug. 15, 1938 and April 1, 1942.

For this study we have included all patients with a diagnosis of pneumococcic pneumonia who received sulfapyridine, sulfathiazole or sulfadiazine regardless of the amount of drug administered. In general, the three therapeutic groups were comparable as to distribution of sex, race, age, pneumococcus type, antecedent disease and the day of illness on which chemotherapy was started. However, the three drugs were used for the most part during different pneumonia seasons or in different months of the same season (chart 1) and one cannot say definitely whether the disease itself was of the same severity throughout the period of this study. If the severity of the disease is based on the relative incidence of bacteremic cases, it would appear (chart 1)

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Dr. William G. Turnbull, Superintendent, and Miss Loretta Johnson, Directress of Nurses, showed constant interest and gave helpful suggestions in the conduct of this study.
From the Committee for the Study of Pneumonia, the Philadelphia General Hospital. Other members of this committee include Drs. J. H. Clark, J. G. Reinhold and S. B. Rose.
1. Clinical facilities were given us for this study by the chiefs of the medical services.

that pneumococcic pneumonia was more severe during the last two years; also there was a definite decrease in the total number of cases within this same period (chart 1). It is possible that the relative increase in bacteremic cases and the appreciable decline in the number of pneumonia admissions were the result of an increasing trend toward home care of patients, and, for the most part, only the more severe cases were hospitalized. However, of equal importance were certain refinements in laboratory methods, particularly the employment of an antisulfonamide, para-aminobenzoic acid,[2] in culture mediums.

The use of para-aminobenzoic acid in blood cultures was commenced in January 1941, and it was about this time that the incidence of bacteremic cases began to rise. It is likely that a number of blood stream infections were not detected in our earlier studies, as in some of our cases samples of blood for culture were not obtained until after one, or sometimes two, doses of the drug had been given, and in addition a number of patients had received some form of sulfonamide therapy before admission to the hospital. Therefore the severity of these pneumonia cases cannot be judged on the basis of bacteremia alone, although we are of the opinion that there was a relative increase in the incidence of severe pneumonias observed in this hospital during the last two years of this study. As shown in table 1, the gross mortality for this entire series of cases was 10.6 per cent. When this fatality rate is compared to that of 40.1 per cent obtained in 1,904 cases observed in this hospital during the five years prior to the introduction of these chemotherapeutic agents, the effectiveness of this form of therapy is obvious.

COMPARATIVE THERAPEUTIC EFFECTIVENESS

The effectiveness of a chemotherapeutic agent for the treatment of pneumococcic pneumonia may be evaluated from the study of (1) the effect of the agent on mortality, on incidence of complications, and on the course of the disease, (2) the toxic effects on the patient and (3) the pharmacologic behavior of the drug in man.

MORTALITY RATES, INCIDENCE OF COMPLICATIONS AND INFLUENCE OF TREATMENT ON THE COURSE OF THE DISEASE

Sulfapyridine, sulfathiazole and sulfadiazine were comparable in effectiveness as judged by the mortality rates (table 1) of 9.7, 12.1 and 10.3 per cent for the three therapeutic groups. Positive blood cultures for pneumococci were obtained in 10.9, 15.0 and 22.2 per cent of patients receiving sulfapyridine, sulfathiazole and sulfadiazine with mortality rates of 32.5, 43.3 and 25.5 per cent respectively. However, as mentioned before, one cannot be certain as to the significance of bacteremia as an index of the relative severity of the cases in each therapeutic group. The incidence of complications was low and comparable in the three drug treated groups (table 2). The most striking clinical observation with the three drugs was the frequency with which the initiation of drug therapy was followed within twenty-four to forty-eight hours by a critical drop in temperature. The action of sulfapyridine[3] and sulfadiazine[4] in lowering the temperature was more rapid than that of sulfathiazole, although the average duration of treatment and the average stay in the hospital was practically the same for all three drug treated groups.

TOXIC EFFECTS

In our experience (table 3) with these drugs in pneumococcic pneumonia, the incidence and severity of toxic reactions following sulfadiazine therapy were less than those observed in patients receiving sulfapyridine or sulfathiazole. This difference in toxicity was principally the relatively lower incidence of untoward gastrointestinal and renal manifestations associated with sulfadiazine treatment.

PHARMACOLOGIC BEHAVIOR IN MAN

In previous papers[5] we have presented data on the absorption, acetylation and excretion of sulfapyridine, sulfathiazole and sulfadiazine in pneumococcic pneumonia patients. Sulfadiazine, given orally, yields higher concentrations of the free drug in the blood and smaller proportions of acetylated drug in the blood and urine than do sulfapyridine or sulfathiazole. Furthermore, acetylsulfadiazine is more soluble in urine than is acetylsulfapyridine or acetylsulfathiazole. These differences in the relative degree of acetylation and solubility of the acetyl derivatives appear to have an influence on the incidence and severity of urinary tract complications following the use of these drugs (table 3). When these compounds are administered intravenously, higher concentrations of the drug are maintained for longer periods with sodium sulfadiazine than with sodium sulfapyridine or sodium sulfathiazole. This is of decided value in the control of infection in certain types of cases.[6]

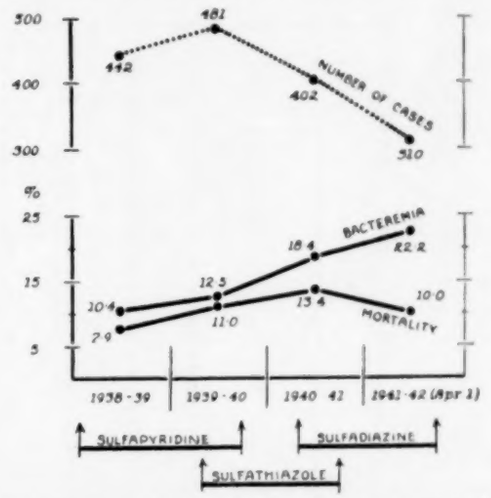

Chart 1.—Number of cases treated, incidence of bacteremia and mortality percentage in each year of this study. The three drugs were employed for the most part over the designated periods.

On the basis of the foregoing data it would appear that the drug of choice for the treatment of pneumococcic pneumonia at the present time is sulfadiazine.

2. Woods, D. D.: The Relation of *p*-Aminobenzoic Acid to the Mechanism of the Action of Sulfanilamide, Brit. J. Exper. Path. **21:** 74 (April) 1940. Selbie, F. R.: The Inhibition of the Action of Sulfanilamide in Mice by *p*-Aminobenzoic Acid, ibid. **21:** 90 (April) 1940. Strauss, Elias; Lowell, F. C., and Finland, Maxwell: Observations on the Inhibition of Sulfonamide Action by Para-Aminobenzoic Acid, J. Clin. Investigation **20:** 189 (March) 1941.

3. Flippin, H. F.; Reinhold, J. G., and Schwartz, Leon: Sulfapyridine and Sulfathiazole Therapy in Pneumococcic Pneumonia, J. A. M. A. **116:** 683 (Feb. 22) 1941.

4. Flippin, H. F.; Rose, S. B.; Schwartz, Leon, and Domm, A. H.: Sulfadiazine and Sulfathiazole in the Treatment of Pneumococcic Pneumonia, Am. J. M. Sc. **201:** 589 (April) 1941.

5. Flippin, H. F.; Lockwood, J. S.; Pepper, D. S., and Schwartz, Leon: The Treatment of Pneumococcic Pneumonia with Sulfapyridine, J. A. M. A. **112:** 529 (Feb. 1) 1939. Flippin, Reinhold and Schwartz.[3] Flippin, Rose, Schwartz and Domm.[4] Flippin, Rose, Schwartz and Domm.[5]

6. Domm, A. H.; Flippin, H. F.; Reinhold, J. G., and Schwartz, Leon: Intravenous Use of Sodium Sulfadiazine in the Treatment of Pneumococcic Pneumonia, Arch. Int. Med. **69:** 51 (Jan.) 1942.

ROUTINE MANAGEMENT OF PNEUMOCOCCIC PNEUMONIA

Early Treatment.—With the exception of the age of the patient (chart 2) and certain others factors [7] beyond the physician's control, the length of time that elapses between the onset of the infection and the beginning of specific treatment is the most important single controllable factor in the prognosis of pneumococcic pneumonia. As indicated in chart 3, there was a definite increase both in the mortality rate and in the incidence of complications in those cases in which chemotherapy was started after the first forty-eight hours of the illness. Hence the best results with these drugs are obtained when they are administered early in the infection, while the number of bacteria is still limited and the extent of tissue involvement is at a minimum. Certainly, sulfadiazine treatment should not be withheld just because response of patients receiving sulfadiazine are still in the experimental stage and are as yet of doubtful clinical significance.[9] Thus it is difficult to outline a course of sulfadiazine therapy which will theoretically be effective, but it seems reasonable, for practical purposes, to administer the drug in a manner which experience indicates will probably be adequate for the treatment of pneumococcic pneumonia of adults.

In general, the oral route has proved to be the most practical method of administering sulfadiazine, although in certain instances its parenteral use is indicated. As a rule, sulfadiazine is readily absorbed from the intestinal tract into the blood stream, reaching levels of 4 to 6 mg. of free drug per hundred cubic centimeters within four to six hours after the oral administration of a single (3 to 4 Gm.) dose. After the fourth to the sixth hour the amount of drug in the blood begins to

TABLE 1.—*Distribution of Types, Bacteremia and Mortality Rates*

	Sulfapyridine Treated				Sulfathiazole Treated				Sulfadiazine Treated				Totals					
	All Cases		Bacteremic Cases (10.9%)		All Cases		Bacteremic Cases (15.0%)		All Cases		Bacteremic Cases (22.4%)		All Cases			Bacteremic Cases (15.2%)		
Type	No.	Deaths	No.	Deaths	No.	Deaths	No.	Deaths	No.	Deaths	No.	Deaths	No.	Deaths	% of Deaths	No.	Deaths	% of Deaths
1	174	8	31	1	81	4	18	3	103	7	32	4	358	19	5.3	81	8	9.7
2	52	5	7	1	14	1	3	1	19	0	5	0	85	6	7.0	15	2	13.3
3	124	24	11	9	76	17	11	8	58	11	11	4	258	52	19.7	33	21	63.3
4	44	5	6	5	32	6	9	6	34	4	7	3	110	15	13.6	22	14	63.1
5	70	2	6	1	24	0	6	0	30	1	9	1	124	3	2.4	21	2	9.5
6	21	1	0	0	14	4	1	0	11	4	1	1	46	9	19.5	2	1	50.0
7	48	4	8	4	41	2	2	1	44	4	8	2	133	10	7.5	18	7	38.8
8	50	2	4	0	33	3	2	1	41	4	9	2	124	9	7.2	15	3	20.0
9	6	1	0	0	8	3	2	2	9	1	2	1	23	5	21.7	4	3	75.0
10	8	1	0	0	7	0	1	0	2	0	0	0	17	1	5.9	1	0	0.0
11	2	0	0	0	4	1	1	0	10	1	1	1	16	2	12.5	2	1	50.0
12	14	2	1	1	4	0	1	0	8	0	2	0	26	2	7.7	4	1	25.0
13	1	0	0	0	9	0	0	0	4	0	0	0	14	0	0.0	0	0	0.0
14	27	3	1	1	20	1	0	0	13	2	4	2	60	6	10.0	5	3	60.0
15	9	3	0	0	4	0	0	0	2	0	0	0	15	3	20.0	0	0	0.0
16	8	2	2	2	7	0	0	0	5	0	1	0	20	2	10.0	3	2	33.3
17	5	1	0	0	8	3	1	0	2	0	0	0	15	4	26.7	1	0	0.0
18	5	0	0	0	14	3	3	2	12	3	3	2	31	6	19.3	6	4	66.7
19	16	2	0	0	10	1	2	1	9	1	2	1	35	4	11.4	4	2	50.0
20	12	1	0	0	3	0	0	0	6	1	1	0	21	2	9.5	1	0	0.0
21	1	0	0	0	0	0	0	0	2	0	0	0	3	0	0.0	0	0	0.0
22	4	0	1	0	5	0	0	0	5	0	0	0	15	0	0.0	1	0	0.0
23	8	1	1	1	2	1	1	1	2	0	0	0	12	2	16.7	2	2	100.0
24	4	0	0	0	4	1	1	1	2	0	0	0	10	1	10.0	1	1	100.0
25	5	1	1	0	11	3	2	2	6	1	2	1	22	5	22.7	5	3	60.0
27	7	1	0	0	5	0	0	0	2	0	0	0	14	1	7.1	0	0	0.0
28	4	2	0	0	2	0	0	0	2	0	0	0	8	2	25.0	0	0	0.0
29	3	0	0	0	1	0	0	0	4	1	0	0	8	1	12.5	0	0	0.0
31	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0.0	0	0	0.0
32	0	0	0	0	3	0	0	0	3	1	1	1	6	1	16.7	1	1	100.0
33	0	0	0	0	0	0	0	0	5	0	1	0	5	0	0.0	1	0	0.0
Totals	733	72	80	26	447	54	67	29	455	47	102	26	1,635	173		249	81	
Mortality		9.7%		32.5%		12.1%		43.3%		10.3%		25.5%		10.6%			32.5%	
Gross mortality			9.7%				12.1%				10.3%				10.6%			

the case is considered mild. Likewise, the use of drug should not be delayed in a suspected case of pneumonia until signs of consolidation have appeared. Obviously, this does not mean that every person suffering with a mild infection of the upper respiratory tract is to be regarded as a pneumonia suspect.

Adequate Chemotherapy.—Theoretically, in order to obtain maximum therapeutic results with sulfadiazine in pneumococcic pneumonia it is necessary to administer the drug in such a manner as to obtain an effective concentration of free drug in the blood as soon as possible and to maintain an adequate level until the patient has developed sufficient immunity against the infection to prevent a relapse. However, we have been unable to establish an optimal blood concentration for sulfadiazine in the treatment of pneumococcic pneumonia,[8] and, furthermore, methods for determining the immunity diminish and, if the blood concentration of the drug is to be maintained or increased, it is necessary to administer additional drug in smaller amounts every four to six hours until the total dosage has been given. Since varying blood levels of the drug result in diminished therapeutic effectiveness, it is important to adhere to this schedule of dosage. As already mentioned, we have been unable to determine any definite correlation between the effectiveness of sulfadiazine and the concentration of free drug in the blood, although it appears that, if a free blood level of 5 to 10 mg. per hundred cubic centimeters is maintained, satisfactory results may be expected. In this connection it should be remembered that such factors as drug absorption and kidney function tend to influence the amount of drug found in the blood, since the drug concentration reached in the blood is dependent both on the rate of entry into, and the rate of exit from, the blood stream. On the basis of these considerations, and after employing several schemes of

7. Flippin, H. F.; Schwartz, Leon, and Clark, J. H.: Factors Influencing the Fatality Rate of Pneumococcic Pneumonia Treated with Sulfonamide Compounds, Ann. Int. Med. **14**: 1969 (May) 1941.

8. Flippin, H. F.; Rose, S. B.; Schwartz, Leon, and Domm, A. H.: Treatment of Pneumococcic Pneumonia with Sulfadiazine and Sodium Sulfadiazine, War Med. **2**: 284 (March) 1942.

9. The Relation of Specific Immunity to Recovery from Pneumococcic Pneumonia Treated with the Sulfonamides, Editorial Comment, Ann. Int. Med. **16**: 577 (March) 1942.

dosage, we have adopted the following dose schedule for the treatment of pneumococcic pneumonia of adults with sulfadiazine:

An initial 3 Gm. dose of sulfadiazine is given orally and followed by 1 Gm. every six hours thereafter, until the temperature has remained normal for forty-eight hours and the patient shows clinical evidence of improvement. It is possible in most cases to adhere to this six hour dose schedule, but occasionally, when a higher blood level of drug is desired, the 1 Gm. dose is given at four hour intervals until the desired drug concentration in the blood is obtained. In order to give sulfadiazine parenterally it is necessary to employ its sodium salt. Best results with sodium sulfadiazine parenterally are obtained with its intravenous use. For intravenous therapy a 5 per cent solution of sodium sulfadiazine in sterile distilled water is employed. Obviously, when the drug is administered by vein, higher blood levels of free sulfadiazine (10 to 18 mg. per hundred cubic centimeters) are obtained more rapidly (within fifteen minutes) than when equal amounts (3 to 4 Gm.) are given by mouth. As a rule, this form of therapy is resorted to for those patients in whom a more rapid elevation of the blood level of drug is desired or when oral medication is impracticable. Patients who are unable to take sulfadiazine by mouth are given an initial 3 to 4 Gm. dose of sodium sulfadiazine intravenously, followed by 2 Gm. every twelve hours thereafter until the total dose has been given. Frequently it is well to give seriously ill patients a large initial dose of drug (3 to 4 Gm.) by vein and at the same time start giving 1 Gm. doses every four to six hours by mouth. In general, the total dosage of sulfadiazine is 20 to 30 Gm., depending on such factors as the day of disease when treatment was started, the presence of bacteremia, spread of the infection, complicating diseases, kidney function and drug toxicity. It is to be remembered that, once drug treatment has been started, it is to be continued, unless signs of severe toxicity develop, until convalescence is established. Not infrequently a fall in temperature proves deceptive and a spread or recurrence in the infection occurs if chemotherapy is stopped too early. Although it is not generally necessary, a safe procedure to follow, when in doubt, is to reduce the dose of drug gradually over a period of days and watch the patient carefully for evidence of recurrent infection.

TABLE 2.—*Complications*

Treatment	Sulfapyridine 733 Cases	Sulfathiazole 447 Cases	Sulfadiazine 455 Cases	Total 1,635 Cases	
Complication	Incidence, per Cent	Incidence, per Cent	Incidence, per Cent	Incidence, per Cent	Mortality, per Cent
Massive pleural effusion	2.2	2.7	2.4	2.3	2.6
Empyema	1.9	1.8	2.2	2.0	28.1
Endocarditis	0.5	0.7	1.8	0.7	100.0
Lung abscess	0.3	0.7	0.7	0.5	75.0
Metastatic abscess	...	0.4	0.2	0.2	66.6
Meningitis	0.1	0.2	0.2	0.2	100.0
Otitis media	0.1	0.4	...	0.2	...
Phlebitis	0.1	...	0.2	0.1	...
Pericarditis	...	0.2	0.2	0.1	100.0

TABLE 3.—*Toxic Reactions*

Treatment	Sulfapyridine 733 Cases	Sulfathiazole 447 Cases	Sulfadiazine 455 Cases
Toxic Reaction	Incidence, per Cent	Incidence, per Cent	Incidence, per Cent
Vomiting	52.2	19.7	3.1
Hematuria: Microscopic	10.1	9.6	4.4
Gross	1.2	0.9	0.2
Loin pain	0.5	0.4	...
Renal calculi	0.4	0.4	...
Anuria	0.1	...	...
Dermatitis	1.9	3.8	1.1
Conjunctivitis	...	0.9	...
Episcleritis	...	...	0.2
Acute hemolytic anemia	0.1	...	...
Leukopenia	3.0	2.5	2.0
Neutropenia	0.8	0.7	...
Fever ?	5.0	5.4	2.2
Psychosis ?	4.8	3.1	5.5

Fluid Balance.—Sulfadiazine, regardless of its route of administration, is excreted mostly in the urine, and its elimination is reduced in the presence of kidney damage. Therefore, with a decrease in kidney function an increase in drug concentration in the blood occurs and, should the volume of urine become low, the possibility of stone formation in the urinary tract by precipitation of crystals of acetylsulfadiazine is greatly increased. However, the excretion of sulfadiazine, both the free and acetylated forms, is definitely increased by an increased rate of flow of urine. Hence it is of importance, in order to facilitate the excretion of the drug by the kidneys, to maintain a urinary output of at least 1,200 cc. in each twenty-four hour period. This is best obtained by forcing fluids, either by mouth or, if necessary, parenterally.

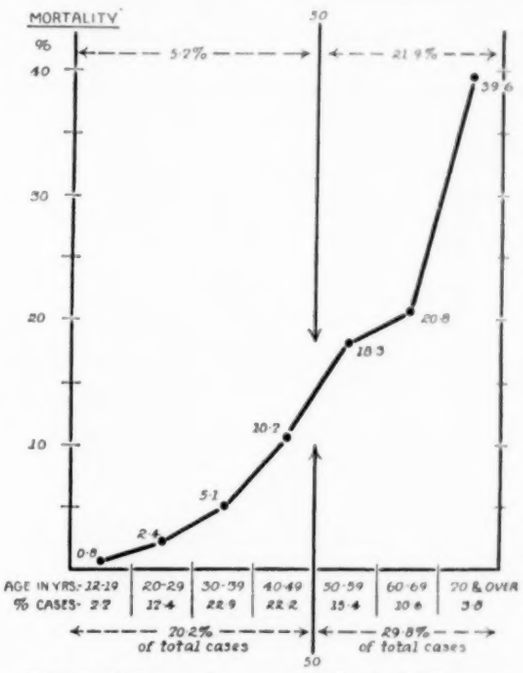

Chart 2.—Influence of age on mortality in 1,635 cases.

Use of Alkalis.—The renal complications following sulfadiazine therapy are due in part, if not entirely, to the presence in the urinary tract of crystals composed of the drug, especially the acetyl portion. Since crystalluria from sulfadiazine appears to be less frequent in an alkaline urine,[10] it is advisable to administer alkalis to patients receiving the drug. It has been our practice to give equal amounts of sodium bicarbonate or sodium citrate to all sulfadiazine treated pneumonia patients

10. Schwartz, Leon; Flippin, H. F.; Reinhold, J. G., and Domm, A. H.: The Effect of Alkali on Crystalluria from Sulfathiazole and Sulfadiazine, J. A. M. A. **117**: 514 (Aug. 16) 1941.

who showed evidence of renal impairment, and it seems practical to administer an alkali routinely to all patients receiving sulfadiazine therapy.

Supportive Measures.—Regardless of the therapeutic value of sulfadiazine in pneumococcic pneumonia, it is not to be used to the exclusion or neglect of established supportive measures. The pneumonia patient requires competent nursing care, complete mental and physical rest, sufficient fresh air, easily digested food and adequate bowel elimination. The intelligent use of morphine still constitutes one of our principal aids in the control of certain disturbing features of this disease, such as apprehension, restlessness and pain. Fortunately the severity of abdominal distention is less pronounced in pneumonia patients receiving chemotherapy than was formerly observed, although occasional patients will require enemas, rectal tubes, local heat to the abdomen, and the use of drugs like solution of posterior pituitary. In general, it is best to avoid the employment of cathartics. Digitalis should be administered when indicated, but not as a routine procedure. We know of no medication or food which cannot be given to pneumonia patients treated with sulfadiazine.

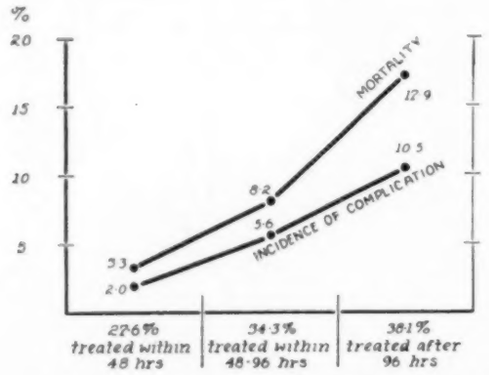

Chart 3.—Mortality and incidence of complications in relation to the length of time that elapsed between the onset of the disease and the beginning of treatment in 1,635 cases.

Control of Drug Toxicity.—Although the incidence and severity of toxic reactions following the use of sulfadiazine in pneumococcic pneumonia are not as severe as those encountered with sulfapyridine or sulfathiazole therapy, it must be remembered that the drug is not entirely harmless to the host.

The vomiting that sometimes follows treatment with sulfadiazine is rarely so severe as to necessitate stopping the drug, but if it becomes so it is advisable to check the fluid and salt balance. Cutaneous and episcleral reactions may occur at any time after the drug is administered but usually after the third day of treatment. Usually it is best to stop the drug, although in certain instances, when necessary, it can be continued with caution. Acute hemolytic anemia has not been observed by us, but others [11] have reported the development of this condition. In such cases the drug should be discontinued and blood transfusions employed. Toxic reactions involving the white blood cells are essentially negligible in the treatment of uncomplicated cases of pneumonia.[12] Occasionally a patient will develop leukopenia, but unless the drug is given for ten days or longer this condition should not cause undue apprehension. Obviously a progressive lowering of the white blood count with a decrease in polymorphonuclear cells below 40 per cent is to be respected, although the severity of the illness not infrequently prevents the stopping of the drug unless type specific serum is available.

Fever due to sulfadiazine may occur at any time but usually after the fourth day. At times it is difficult to determine whether the temperature rise represents a drug reaction or a recrudescence of the infection. The fever of the original infection is usually normal by the third day of treatment, except when complications develop; if the patient is clinically improved, a secondary rise in temperature may usually be attributed to the drug. In such cases, if chemotherapy is stopped and fluids are forced, the temperature will drop within twenty-four to thirty-six hours. Whenever possible, it is best to discontinue chemotherapy in the presence of drug fever, as not infrequently this condition is followed by more serious toxic reactions. Psychoses due to sulfadiazine are difficult to evaluate in seriously ill pneumonia patients, but they do occur and, unless the infection is under control, there is no necessity to withdraw the drug.

Toxic reactions involving the urinary tract may occur with sulfadiazine at any time but are most commonly seen after the fifth day of treatment. As mentioned before, the renal complications from sulfadiazine are due in part, if not entirely, to the presence in the urinary tract of crystals composed of the drug. However, the presence of crystalluria alone does not indicate renal involvement unless it is associated with progressing oliguria, hematuria, azotemia or loin pain. In this study, approximately one fourth of the sulfadiazine treated patients showed crystals, presumably of the drug, in the urine. Microscopic hematuria was observed in 4.4 per cent of these patients, which is only slightly above the reported incidence of hematuria in cases of untreated pneumonia.[13] Unless a considerable number of red blood cells are detected or other evidence of renal damage is apparent, cautious treatment may be continued; but it should be remembered that hematuria is often a precursor of severe renal insufficiency. Obviously the appearance of gross hematuria is an indication for stopping the drug. Although no anuria, renal calculi or loin pain was seen in this group of pneumonia cases treated with sulfadiazine, we have encountered these complications. In practically every instance in which a severe renal reaction to sulfadiazine has been observed, alkalis or adequate quantities of fluids had not been given and sulfadiazine had been administered over a period of four or more days. It is our impression that the relatively low incidence of renal complications in this series of sulfadiazine treated cases may be related to the emphasis that was constantly placed on adequate fluid intake during drug therapy and the administration of alkalis. Should any of the kidney complications mentioned be encountered during sulfadiazine therapy, the treatment consists in prompt cessation of the drug, alkalization of the urine, forcing of fluids, administration of hypertonic dextrose solution to promote diuresis and ureteral catheterization, if necessary. The administration of mercurial compounds as diuretics or the use of magnesium sulfate as a cathartic is contraindicated in such cases.

11. Dowling, H. F.; Hartman, C. R.; Sugar, S. J., and Feldman H. T.: The Treatment of Pneumococcic Pneumonia with Sulfadiazine, J. A. M. A. **117**: 824 (Sept. 6) 1941.

12. Dr. Walter J. Crocker, chief of the Division of Clinical Pathology of the Laboratories of the Philadelphia General Hospital, cooperated with the authors in this study.

13. Reimann, H. A.: The Pneumonias, Philadelphia, W. B. Saunders Company, 1938, p. 70.

CONTRAINDICATIONS TO SULFADIAZINE THERAPY

Theoretically, the only possible contraindication to the use of sulfadiazine in pneumococcic pneumonia is a history of previous sensitivity to one of the sulfonamide compounds. However, in our experience there have been a number of patients who have developed toxic reactions to one of these drugs and not to another member of this group of compounds, although this would not necessarily indicate that the patient would not have had a toxic reaction if the original drug was used again. If a history of previous drug toxicity was obtained and the patient required immediate specific treatment, it has been our practice to use chemotherapy at once and follow the patient very closely for possible drug toxicity, rather than delay specific treatment until the administration of serum was made possible. In such cases we selected the drug least likely to cause the same type of toxic reaction (table 3). It is too early to say whether the widespread use of the sulfonamides will result in an increasing number of patients developing sensitivity to these drugs, but, in view of the frequency with which pneumococcic pneumonia recurs, this problem merits further consideration. In a series of 24 adults having recurrent pneumococcic pneumonia treated with sulfapyridine, sulfathiazole or sulfadiazine on two or more occasions there was no evidence to suggest that the repeated use of these compounds had influenced the incidence or severity of drug toxicity.[14] The presence of jaundice, acute nephritis, anemia, leukopenia or neutropenia per se in a pneumonia patient does not contraindicate drug therapy, as these conditions will usually disappear as the infection is brought under control by adequate sulfadiazine treatment. Obviously, if such conditions are present, necessary measures should be taken to detect their further development.

MANAGEMENT OF COMPLICATIONS

The presence of pus in a lesion prevents the sulfonamides from acting on bacteria with the same maximum effect which they exhibit in diffuse, nonsuppurating infections. Sulfadiazine, therefore, is not to be employed as a substitute for surgical procedures in complications from pneumonia, such as empyema or abscesses, although the drug may be used in the hope of preventing a spread of the infection. Usually, in cases of massive pleural effusion, chemotherapy and thoracentesis will prove sufficient; but, if the effusion is thick and purulent, surgical intervention is indicated. Not only is the early diagnosis of pus-containing lesions in cases of pneumonia of great importance as an aid in treatment but also the incidence of severe drug reactions is greater in patients receiving chemotherapy over long periods of time.

TYPE SPECIFIC SERUM

For the most part the role of type specific serum in the treatment of pneumococcic pneumonia remains a controversial subject. Certainly there is no clinical basis for its routine use,[15] although there are certain pneumonia cases which are benefited by the administration of serum in combination with chemotherapy. For the most part we have limited the use of serum alone to cases in which severe drug reactions prevented the further use of chemotherapy, and of serum plus drug in cases that failed to respond satisfactorily to the drug within twenty-four to forty-eight hours. On this basis, type specific serum was employed in 124 (7.6 per cent) of our cases (table 4) with a mortality of 37.9 per cent. Whether the successfully treated patients in this subgroup would not have recovered without the additional use of serum, we cannot say. There were, however, a number of seriously ill patients who showed a prompt clinical response after serotherapy. Not infrequently, serum was employed in cases with serious antecedent and/or complicating diseases with little or no expectation of its being effective. Unfortunately, concentrated efforts were not made to determine which of the cases in the combined therapy group represented drug fast infections or failures in immunity response. Obviously, these two factors constitute the basis for the rational use of serum in those cases failing to respond to chemotherapy. No doubt, with the development of more accurate methods to evaluate these factors, the employment of type specific serum will play a more definite role. At the present time it seems reasonable to use serum for patients unable to tolerate the drug and patients failing to respond to chemotherapy. When administering serum, the usual preliminary sensitivity tests, conjunctival and intradermal, must always be performed. If these prove negative after twenty minutes, further intravenous testing with undiluted serum (1 cc.) is carried out. If, after seventy minutes, no untoward reaction has occurred, the patient is given an initial dose of 100,000 units of undiluted serum intravenously, followed by further injections when necessary. In general, if serum is beneficial, the patient will respond to 300,000 units or less.

TABLE 4.—*Combined Therapy Cases*

	All Cases		Bacteremic Cases (45.9 per Cent)	
Type	Number	Deaths	Number	Deaths
1	29	7	18	4
2	8	2	2	1
3	25	14	8	5
4	12	7	11	7
7	18	5	7	4
8	9	3	1	..
Others	23	9	10	7
Total	124	47	57	28
Mortality, per cent	37.9		49.1	

LABORATORY PROCEDURES

The employment of certain laboratory procedures is of great importance in the diagnosis and treatment of pneumococcic pneumonia. In every case there should be adequate bacteriologic studies to determine the type of pneumococcus responsible for the infection. It is true that in most cases of pneumonia this information is of no therapeutic value, but in instances in which type specific serum is indicated, a knowledge of the pneumococcus type is indispensable. Blood cultures should be obtained as soon as possible. As already mentioned, if an antisulfonamide substance, para-aminobenzoic acid (5 mg. per hundred cubic centimeters of medium) is added to the culture material, the inhibitory action of the sulfonamide will be neutralized. This procedure should be adhered to whenever the patient has received even small doses of any sulfonamide. The sputum should be studied to determine the pneumococcus type, but in cases in which there has been some delay in

14. Schwartz, Leon; Flippin, H. F., and Clark, J. H.: Recurrent Pneumococcic Pneumonia Treated with Sulfonamides, J. Lab. & Clin. Med., to be published.

15. Plummer, Norman; Liebmann, James; Solomon, Saul; Kammerer, W. H.; Kalkstein, Mennasch, and Ensworth, H. K.: Chemotherapy Versus Combined Chemotherapy and Serum, J. A. M. A. **116:** 2366 (May 24) 1941.

typing, and the blood culture is positive, this examination is not necessary.

A blood count, including hemoglobin determination, leukocyte count and a differential enumeration of the white blood cells should be done, preferably before the institution of drug therapy. It is best to check these blood constituents every two or three days, especially in cases in which the drug is required for longer than ten days. There is no absolute relationship between the number of leukocytes and the severity of the infection. In general a high initial white count which diminishes rather rapidly after forty-eight hours of treatment with the drug is of good prognostic import, while a persistent or progressively high count often indicates a spread in the infection or a complication. Patients with low initial white counts are often seriously ill, but if they respond to treatment the count will usually increase within forty-eight hours. The failure of a low white cell count to rise is generally a poor prognostic sign.

Because of the potential dangers of sulfadiazine to the urinary tract, it is important to watch every patient closely for evidence of renal damage. The total amount of urine voided in each twenty-four hour period should be recorded, as well as gross and microscopic urine studies daily to detect any evidence of kidney irritation. Blood urea nitrogen or nonprotein nitrogen determinations should also be performed in cases in which there are diminishing urinary outputs, and serum chlorides should be determined in cases in which appreciable quantities of fluid and electrolyte are lost. In most instances it is not necessary to determine the blood concentration of sulfadiazine. However, in cases failing to respond satisfactorily to the drug or with diminishing urinary outputs, it is practical to ascertain the amount of drug in the circulating blood.

SUMMARY AND CONCLUSIONS

Within the period of this study, Aug. 15, 1938 to April 1, 1942, 1,635 adults with pneumococcic pneumonia were treated with sulfapyridine, sulfathiazole or sulfadiazine with an averaged mortality of 10.6 per cent. This figure is to be compared to that of 40.1 per cent mortality obtained in 1,904 cases of this disease observed at the Philadelphia General Hospital during the five years prior to the introduction of these drugs. From the data presented in this report it appears that sulfadiazine is the drug of choice at the present time for the treatment of pneumococcic pneumonia. To obtain maximum therapeutic results with sulfadiazine in pneumonia, certain principles must be recognized and followed. Regardless of the effectiveness of sulfadiazine in pneumococcic pneumonia, it is not to be employed to the exclusion or neglect of other established therapeutic measures. The following plan of sulfadiazine treatment of pneumococcic pneumonia is suggested:

1. Early treatment.
2. Adequate chemotherapy:
   (*a*) Large initial dose.
   (*b*) Smaller doses at regular intervals.
   (*c*) Continuation of drug until convalescence is established.
3. Maintenance of adequate urinary output.
4. Routine use of alkalis.
5. Prompt recognition of drug toxicity.
6. Determination of specific pneumococcus type.
7. Employment of other therapeutic measures as necessary:
   (*a*) General supportive treatment.
   (*b*) Type specific serum.
   (*c*) Surgical procedures.

ABSTRACT OF DISCUSSION

DR. ADOLPH S. RUMREICH, Chicago: Dr. Flippin and his associates have given a comprehensive presentation of up to date treatment of pneumococcic pneumonia. Their work demonstrates the encouraging results that can be achieved on a large scale by the proper use of present day diagnostic facilities and therapeutic armamentarium. The great reduction in mortality from pneumonia since the introduction of specific chemotherapy seems to have led to a complacent assumption in some responsible quarters that the problem has been all but liquidated and that it need no longer be a cause for concern on the part of public health authorities. However, as Dr. Bortz has pointed out, there still occur thousands of preventable deaths from this cause. Dr. Flippin has stated that the length of time that elapses between the onset of the infection and the beginning of specific treatment is the most important single controllable factor in the prognosis of pneumococcic pneumonia. Control of this element alone is worthy of the best joint effort of medical organizations and public health departments, in the promotion of early medical attention, prompt and accurate diagnosis and prompt and adequate modern treatment. The good results of statewide cooperative programs are susceptible of proof. Opinions differ as to the desirability of universal treatment of respiratory tract infections with sulfonamide compounds, and practices differ accordingly. None of these drugs are panaceas, nor are they innocuous. That they are specific in pneumococcic and useful in certain other pneumonias does not warrant their indiscriminate use, as they are not only valueless but may be definitely harmful in some of the atypical pneumonias. We cannot yet safely dispense with accurate diagnosis and forego utilization of clinical laboratory and other adjutant facilities. The increasing trend toward home care of patients, reflected favorably in case fatality statistics, not only redounds to the welfare of the patient but tends to conserve community resources. The current trend thus seems to be all to the good, provided there is sustained endeavor for maintenance of proper safeguards in order that the maximum benefit of our remarkable new tools and weapons may be achieved.

DR. WORTH B. DANIELS, Washington, D. C.: The section might be interested in our experience with pneumonia at a large army cantonment hospital. The Station Hospital at Fort Bragg, North Carolina, has 3,000 beds and serves a large military population. During the year 1941 there were 488 patients with pneumonia with five deaths, a mortality of approximately 1 per cent. Four of these patients died with pneumonia occurring secondary to other illness; 1 died of atypical pneumonia and none of lobar pneumonia. During the first five months of 1942 there have been 552 patients admitted with pneumonia; 384 were diagnosed as having lobar pneumonia and 164 as having atypical pneumonia. There has been one death, and this occurred in a civilian literally deposited on our door step in a moribund state on the tenth day of his illness. The mortality rate for this five months period is approximately 0.2 per cent. During 1941 and the first five months of 1942 there have been 1,040 patients admitted with pneumonia of various types and 6 have died. The mortality, therefore, has been 0.6 per cent. You will notice that during the last five months the total number of patients with pneumonia has exceeded the number for the entire year 1941, though there has been little change in the post strength. This is attributable to the increase in so-called atypical pneumonia, which has recently become prevalent or better recognized throughout the country. The communicability of this disease has now been clearly shown and accounts for the high incidence among troops and other closely associated groups of young persons. As you may know, two of the earlier descriptions of this disease were contributed by army physicians, Bowen in Hawaii in 1935 and Allen at Fort Sam Houston, Texas, in 1936. Our remarkably low mortality is probably due to five factors: 1. The material with which we deal, namely; a group of picked, vigorous young soldiers. 2. Admission to the hospital very early in the illness, with immediate institution of therapy. 3. The curative properties of the sulfonamides in pneumococcic pneumonia. 4. Segregation of patients with pneumonia in wards administered by medical officers, nurses and soldier attendants who have become expert in the handling of this disease. 5. The mild character

of the atypical pneumonias we have encountered. Sulfathiazole was used almost exclusively until February of this year but is being gradually replaced by sulfadiazine. Various toxic effects have occurred, but rarely have serious complications arisen. It would appear that the modern treatment of pneumonia in a large cantonment hospital caring for troops not actually engaged in combat has maintained the mortality of this disease at 0.5 per cent.

DR. HARRISON F. FLIPPIN, Philadelphia: As pointed out by Dr. Daniels and Dr. Rumreich, the problem of atypical, or so-called virus, pneumonias is becoming more apparent. There is little or no reason to believe that sulfonamide therapy is effective in this type of pneumonia. However, it is often difficult to determine whether a patient is suffering with this particular disease, and for this reason it has been our practice to administer sulfadiazine to all pneumonia patients for at least seventy-two hours, and if within that time no clinical improvement has been noted the drug is stopped. The most important aspect of sulfadiazine therapy at present is that of urinary tract complications. Again we wish to emphasize the importance of maintaining an adequate urinary output and the routine use of alkalis. Although sulfadiazine is not ideal, it is the best drug now available for the treatment of pneumococcic pneumonia, and if it is used with regard for its toxic possibilities, and if the patients for whom it is used are thoroughly studied and carefully followed, it is a therapeutic agent with a satisfactory margin of safety.

SESAME OIL TUMORS

ADOLPH H. CONRAD, M.D.
ADOLPH H. CONRAD JR., M.D.
AND
RICHARD S. WEISS, M.D.
ST. LOUIS

In 1920 Mook and Wander [1] described the occurrence of painful, tender, slowly growing tumors in 6 patients who had been previously subjected to serious operations and had received camphor in oil injections as a stimulant. Several similar cases have since come under our care and we have seen others in clinical meetings in various cities throughout the country. In all of the cases seen the camphor oil injections had been made many years previous to our observation. Pharmaceutical houses, since the publication of Mook and Wander's report, have generally discontinued the sale of camphor

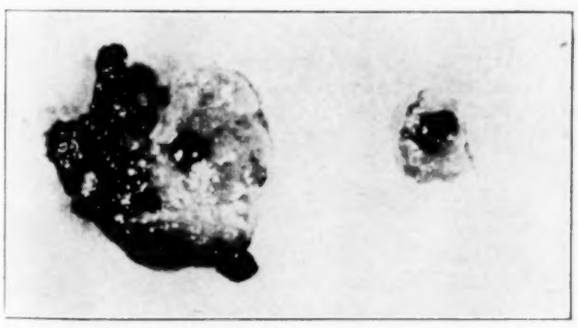

Fig. 1.—Gross tumors (about half natural size) removed from arm. The globular dark areas are oil filled cysts.

and other drugs dissolved in liquid petrolatum. We have been watching for tumors due to the injection of other oils, because we knew that Burrows and Johnston [2] were able to produce oil tumors in rats by the subcutaneous injection of corn oil. The tumors which they produced did not show as much cellular reaction as the camphor oil tumors, probably because of the lack of the irritant action of camphor. It should also be noted that a case of multiple tumors in the buttock was reported by Irwin Sutton [3] following the injection

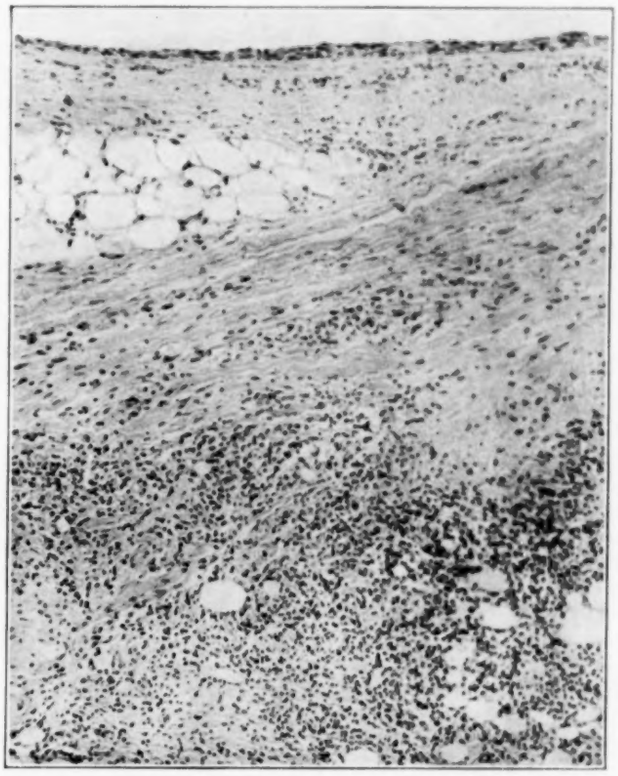

Fig. 2.—Cyst wall and infiltrate surrounding cyst (magnification about 95 diameters).

of mercuric salicylate in linseed oil. Weidman and Jeffries [4] concluded that olive oil and cottonseed oil were innocuous when injected subcutaneously but admitted that their position was somewhat insecure on this point. Burrows and Jorstad [5] found that oil tumors which had remained small and quiescent for years became active almost at once when the patient was placed on a salt poor and vitamin poor diet. Jorstad and Glenn [6] intimated that the vitamin concerned is vitamin A. It is attractive, of course, to theorize that oil tumors occur in patients who habitually are on a diet low in vitamin A, but no definitive proof exists as yet that such is the case.

A patient came under our observation who had tumors clinically identical with those reported by Mook and Wander. The oil injected was sesame oil containing estrogenic substance.

REPORT OF CASE

Mrs. M. V., a white woman aged 35, admitted to the skin clinic of the Barnard Free Skin and Cancer Hospital on March 12, 1940, complained of painful lumps in both arms, which she stated had been present since 1935.

Read before the Section on Dermatology and Syphilology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1942.

Studies, Observations and Reports from the Dermatological Departments of the Barnard Free Skin and Cancer Hospital and the Washington University School of Medicine, service of Dr. M. F. Engman, XCVIII.

1. Mook, William H., and Wander, William G.: Camphor Oil Tumors, Arch. Dermat. & Syph. **1**: 304-318 (March) 1920.

2. Burrows, Montrose T., and Johnston, Charles G.: The Action of Oils in the Production of Tumors, with a Definition of the Cause of Cancer, Arch. Int. Med. **36**: 293-332 (Sept.) 1925.

3. Sutton, Irwin: Tumor Formation After Injection of Mercuric Salicylate in Linseed Oil, Arch. Dermat. & Syph. **7**: 223-225 (Feb.) 1923.

4. Weidman, F. D., and Jeffries, M. S.: Experimental Production of Paraffin Oil Tumors in Monkeys, Arch. Dermat. & Syph. **7**: 209-222 (Feb.) 1923.

5. Burrows, M. T., and Jorstad, L. H.: Cause of Growth of Sarcoids or Oil Tumors, J. A. M. A. **88**: 1460-1462 (May 7) 1927.

6. Jorstad, L. H., and Glenn, F. H.: The Action of Oils in Muscle Tissue, J. A. M. A. **90**: 26-27 (Jan. 7) 1928.

The relevant items in her history were as follows: In 1929 she had had a unilateral salpingo-oophorectomy done. In 1934 a second operation was done, at which time the uterus and the remaining fallopian tube and ovary were removed. The postoperative course was uneventful. Inquiry as to her diet since 1929 seemed to indicate that it was adequate and did not lack vitamin containing foods.

On account of menopausal symptoms she was given treatment with estrogenic substance in oil administered at intervals over a period of three years. The injections were said to have been given twice weekly into the muscles of the upper arm. After about six months of this treatment the patient noticed lumps forming at the sites of injection. She complained of this to her physician and was told that they would disappear in time. Some of them did disappear, but numerous nodules remained. The lesions had been increasing in size and number during the past two years.

When the patient was first seen in the clinic she presented numerous subcutaneous nodules in the lateral portion of both arms, chiefly in the upper third. The masses were fairly well circumscribed and could be moved to a slight extent in the subcutaneous tissue. Pressure on the masses caused a moderate amount of pain, and the patient further stated that at times the lesions would throb and ache without apparent cause. There was no inflammatory reaction on the skin. Some of the masses were as large as 4 or 5 cm. in diameter and they varied from that size down to 0.5 cm. They occurred in chainlike distribution in the subcutaneous tissue.

On March 13, 1940 the tumors were removed from the left arm, and in the following May the remaining more numerous lesions were excised from the right arm. The postoperative course in both instances was uneventful.

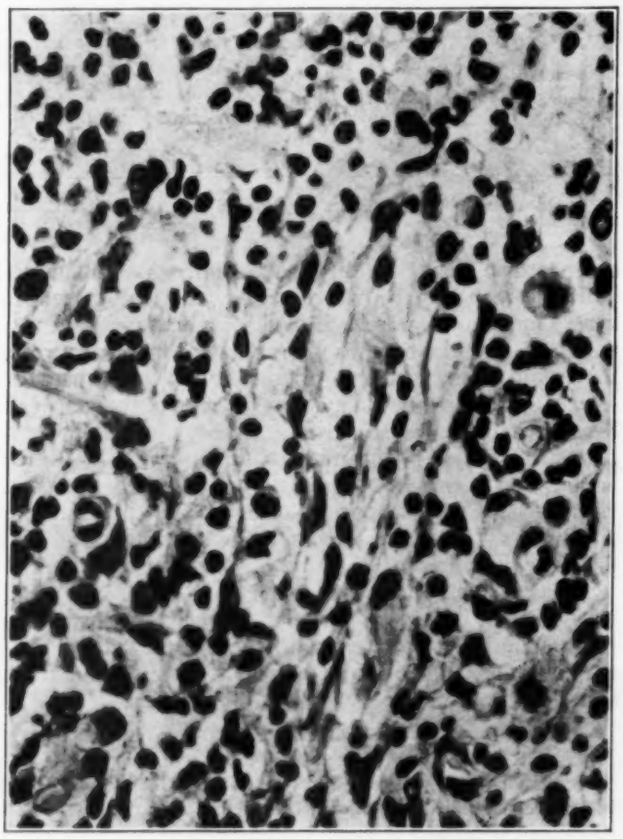

Fig. 3.—Infiltrate from cyst wall slightly reduced from a photomicrograph with a magnification of 520 diameters.

Gross examination of the tumors revealed numerous cysts embedded in fat. The tumors were not found in the fascial planes or in the muscle but only in the rather thick layer of subcutaneous fat. The cysts varied in size from small globules about 1 mm. in diameter to elongated lesions measuring about 1.5 cm. in length, having a diameter of about 7 or 8 mm. (fig. 1). Their appearance was that of a simple cyst with a semitransparent cyst wall. When a larger cyst was cut into, oil escaped. The oil was clear, slightly yellowish and unstained. The cysts occurred singly or in groups. Most of the single cysts were the larger ones. Gross evidence of a foreign body reaction was shown by a proliferation of pericystic connective

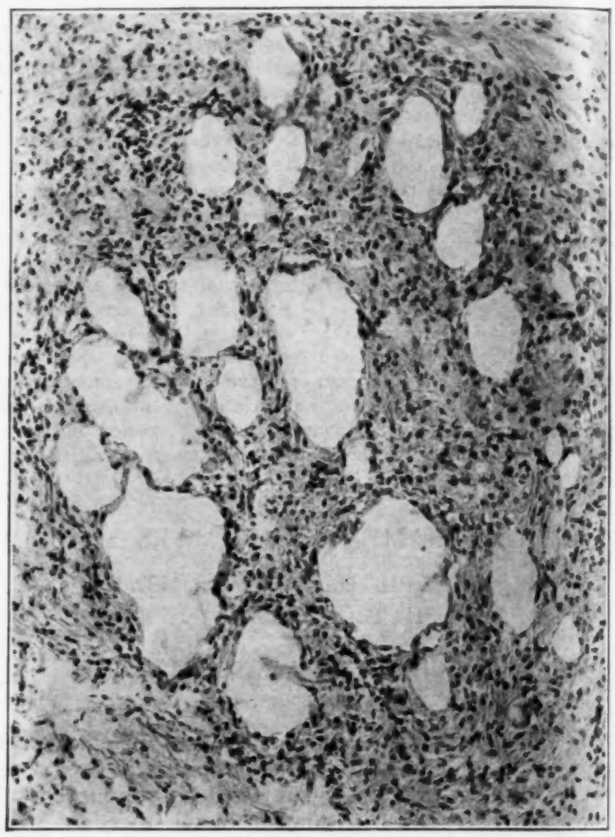

Fig. 4.—Group of small cysts (slightly reduced from a photomicrograph with a magnification of 145 diameters). Flattened lining cells are easily distinguished from fat cells by the variation in size and shape.

tissue extending out into the surrounding fat. This was most definite in the areas where there were numerous small cysts. This proliferation of the connective tissue, binding the surrounding fat to the cyst, made the lesions feel much larger on palpation.

MICROSCOPIC STUDIES

In sections stained with hematoxylin and eosin, the cysts were found to be lined by large flattened cells most of which had retained their nuclei. The cytoplasm of some of them was finely granular and others contained deposits of yellowish droplets, apparently lipoid material. A diffuse infiltration of small round cells, probably lymphocytes, was found about each cyst. This infiltration was more pronounced around the groups of tiny cysts. Occasional plasma cells and a few epithelioid cells were found. The infiltrate was not sharply defined but faded out into the surrounding normal fat (figs. 2, 3 and 4). Many large phagocytic cells were found near the walls of some of the cysts. The nuclei of these cells were eccentrically placed and they had somewhat the appearance of large plasma cells. In the cytoplasm were found numerous, small irregular, refractile golden brown globules (figs. 5 and 6). Sections stained with sudan III showed that the globules were fatty material. These cells, which were interpreted as macrophages, were found most profusely a slight distance away from the cysts and occurred both singly and in masses. An occasional giant cell was found.

COMMENT

The material injected was stated by the patient's physician to have been estrogenic substance in oil. At that time the pharmaceutical house from whom the

material was obtained marketed the estrogenic substance in sesame oil. We are therefore justified in assuming that the tumors were the result of sesame oil injection. Not enough oil could be obtained from our specimens for an attempt at chemical analysis. Furthermore, it is doubtful if an oil of this character could be identified chemically.

The microscopic picture differed from that of the camphor oil tumors in that little or no fibrous encapsulation of the oil droplets was noted and the granulomatous nature of the infiltration was less pronounced. Mook and Wander stated that a diagnosis of tuberculosis had been made in their first case, but such an error was out of the question when our slides were examined. While the infiltration was granulomatous in nature, the scarcity of giant cells and plasma cells and the relatively scanty amount of infiltration excluded definitely the infectious granulomas.

There were numerous cells of a phagocytic character containing droplets of oil (figs. 5 and 6) which took sudan III stain. This activity of the phagocytic cells might indicate loss of oil from the cystic areas with encapsulation by the phagocytes.

The tumors were not malignant in the usual sense, but they were invasive locally by seepage of oil from the encysted area and the formation of new tumors in more or less chainlike arrangement along the arm. In this they were quite like the tumors of Mook and Wander.

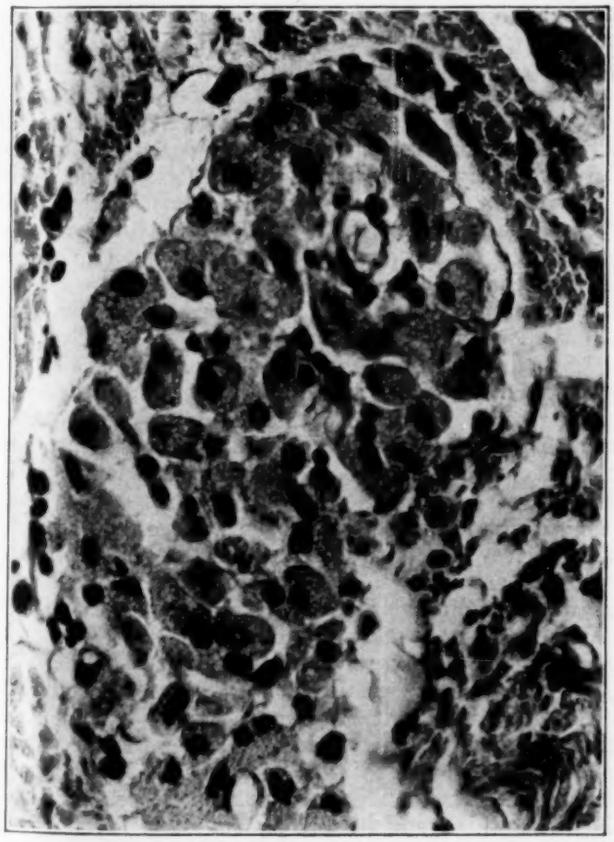

Fig. 5.—Group of macrophages which have taken up droplets of fatty material, slightly reduced from a photomicrograph with a magnification of 520 diameters.

SUMMARY

Tumors occurred in the subcutaneous tissue of the arms of a patient treated with estrogenic substance dissolved in sesame oil.

The tumors were found in the subcutaneous tissues, were in chainlike masses and were invasive, moderately painful and increasing in size.

Microscopically the tumors differed from the Mook and Wander camphor oil tumors in that the fibrous encapsulation of the oil droplets was far less dense and the granulomatous infiltration was much thinner. The giant cells observed in our case were very scanty in number.

Operative measures were required to give the patient relief and to stop the spread of the tumors.

Fig. 6.—High power view of a group of macrophages containing fatty material, slightly reduced from a photomicrograph with a magnification of 1,380 diameters.

CONCLUSIONS

Invasive tumors may be produced by injection of estrogenic substance in sesame oil.

It is our belief that the tumors are due to the oil and not to the combination of estrogen and oil.

The injection of oils carrying active drugs and endocrine preparations into the subcutaneous tissues should be avoided.

Subcutaneous and intramuscular oil injections into the arms may produce in some persons painful and disabling tumors. Owing to the anatomicophysiologic factors involved, the tumors may increase in size and number by migration of oil droplets, so that operative measures may become necessary.

It is our belief that the muscles of the arms should be abandoned as a site for oil injections of any character and that only the gluteal muscles in the upper outer quadrant of the buttocks should be used for such injections.

3720 Washington Boulevard.

ABSTRACT OF DISCUSSION

DR. FRED D. WEIDMAN, Philadelphia: I agree in all respects with the conclusions in this presentation. This condition must be classified as tumor in the same sense that we speak of paraffin oil tumors. The authors have emphasized throughout the fact that there were chainlike extensions from the original focus of the disease. The puzzlement centers around the pathogenesis of the condition. Ordinarily we think of sesame oil, chemically speaking, in the same way that we do of olive oil. The composition of sesame oil except for slightly differing proportions is the same in respect to oleates, palmitates and stearates. It is possible that an adulterant was used in the sesame oil such as the much less expensive paraffin oil. That, of course, is a question. Perhaps some light might have been thrown on this possibility had frozen sections been stained with osmic acid as well as with scarlet red. If it was found that all the fat stained black, that would eliminate the possibility of there being any paraffin oil in the lesions, at least at the time that they were examined. The second possibility is that these lesions might be the result of disorganization of the fat; that is, that they were truly fatty cysts and not necessarily lesions which pathologically were what we call paraffin oil tumors. The fact that the walls of these cysts were so definite inclines one in favor of that hypothesis. There is a long spread of years, though, elapsing between the introduction of the oil and the time of the microscopic examination. It seems as though during that time the products of disorganization should have been absorbed. There is no explanation in this case as to why the sesame oil should have produced these tumors. Sesame oil, like olive oil, of course, in time should become saponified and should become absorbed. Perhaps this is the last straw on which one would have to rely in explaining the development of this lesion. Is it possible that the original focus of fat destruction did not resolve in the way that it should because there was a more or less continuous accumulation of the cholesterol and other nonsaponifiable substances, such as are included in normal subcutaneous fat? Normal subcutaneous fat does not consist purely of olein, palmitin and stearin. There is a certain definite admixture of cholesterol, and it is possible that for some reason or other the lesions did not heal up presently, but, there being a gradual disintegration of the fat, the cholesterol and such insoluble substances remained behind to serve to continue the reaction on the part of the tissue which led to these chainlike infiltrations into the surrounding tissues.

DR. FRANCIS A. ELLIS, Baltimore: This type of tumor is rare. Sesame oil has been used for many years as a vehicle for endocrine products. Dr. Emil Novak, who has written many articles on endocrine therapy, and other physicians interviewed have had no personal experience with this type of tumor, and no previous reports were found in the literature or in the *Quarterly Cumulative Index Medicus*. Iodine in sesame oil has been used by roentgenologists. The oil is usually absorbed from the bronchial tree and from body cavities or sinuses. Considering the fact that the patient had received possibly several hundred injections brings up the question of whether some of the oil was absorbed and, if it was, why wasn't more absorbed? This may have been due to accumulative trauma caused by many injections with the replacement of the normal tissue by fibrosis. There was some evidence of increased fibrous tissue about and in the wall of some of the smaller blood vessels which could have lowered the blood supply and made it inadequate for the removal of all the oil. Another reason for the decrease of absorption may be a mild allergic reaction to the oil or to the hormone contained in the oil. The three sections sent to me by the authors showed that the foreign body reaction is far less than that due to the inorganic paraffin and mineral oil tumors. The presence of the foam cell within the fibrous capsule of the cysts demonstrates that the ordinary foam cell is not neoplastic but is due to the absorption or the phagocytizing of the oil by macrophages. There were a number of yellow granules in some of the fibrous tissue that looked like hemosiderin which the authors didn't mention. They were not round, and if they were fat they should have been dissolved out by the dehydrating fat solvents used in making the sections. The word "invasion" may be a poor term to use in describing this type of tumor, as it connotes an aggressiveness or self propulsion on the part of the tumor, whereas the oil spreads according to physical laws, by the movement of muscles, gravity, and because of the reaction to the foreign body resulting in phagocytosis and fibrosis. Weidman and Jeffries (*Arch. Dermat. & Syph.* **7**:209 [Feb.] 1923) demonstrated experimentally that oil could be transported by the lymph of vessels.

DR. J. LOWRY MILLER, New York: I have seen 2 patients this past year, one at the Columbia Medical Center and another at the New York City Hospital Clinic, both of whom had tumors which were clinically typical of paraffinoma. However, both patients had been definitely told that the injection was not paraffin before it was given.

DR. ADOLPH H. CONRAD, St. Louis: We should be on the alert and look for these tumors in the future. I understand that estrogenic substances are now being marketed in peanut oil, and the use of sesame oil has been abandoned. However, other preparations are being used for injection purposes which have as their base sesame oil; therefore it will be well to keep the possibility of tumor formation in mind.

THE PREVENTION OF PULMONARY COMPLICATIONS FOLLOWING THIGH AMPUTATIONS

BY HIGH LIGATION OF THE FEMORAL VEIN

J. ROSS VEAL, M.D.
WASHINGTON, D. C.

When, in the course of events, the vascular supply to a lower extremity is so severely damaged by disease that gangrene of the toes or the foot results, it is not surprising that the patient's very life is in extreme jeopardy. Frequently the disease involves the entire vascular system. There is often impairment of function of certain vital organs, notably the heart and kidneys. Procrastination of removal of the dead part invites further bodily injury from pain, infection and toxic absorption. One cannot fail to be impressed by the hazards facing these aging individuals with vascular gangrene, nor can one ignore the sad plight in which the surgeon often finds himself in attempting to relieve the situation. Surgery is a precarious undertaking, for amputation must be performed at a sufficiently high level to insure healing of the stump. Uniformly the higher the site of the amputation, the greater the mortality rate.[1] Persons fortunate enough to have a sufficient blood supply of the leg to allow amputation below the knee usually present a favorable prognosis. It is in those cases in which the vascular damage is so great that amputation must be performed above the knee that the problem of surgery becomes most urgent.

There are many factors which affect the outcome of thigh amputations for vascular gangrene.[2] Chief among these are the age of the patient, the extent and duration of his disease, the exciting cause of the gangrene, local and systemic infection, the state of health of his heart and kidneys, and particularly the postoperative pulmonary complications. These include pneumonia, pulmonary infarcts and massive pulmonary embolism. The incidence of pulmonary complications following thigh amputations is out of all proportions to similar conditions in other fields of surgery. In a

From the Department of Surgery, Gallinger Municipal Hospital.
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1. Veal, J. R., and McFetridge, E. M.: The Surgery of Gangrene of the Extremities, with a Study of 171 Cases from the Records of Charity Hospital in New Orleans, Surg., Gynec. & Obst. **60**: 840-847 (April) 1935.

2. Veal, J. R.: Factors in the Mortality Rate of Arteriosclerotic Gangrene, J. A. M. A. **110**: 785-789 (March 12) 1938.

series of two hundred and seventy-five amputations at various levels of the extremities which have previously been reported, 14.9 per cent of the patients died from postamputation pulmonary complications. Practically all these complications occurred in the thigh amputation group. It seems clear then that pulmonary complications following thigh amputations for vascular gangrene present a serious problem for the surgeon.

A closer study of the pulmonary lesions in the aforementioned cases revealed several important findings that seemed to have a direct bearing on this problem. The majority of the lung complications were diagnosed as pneumonia, though the characteristic distribution, the x-ray findings and the clinical course indicated that many were embolic lesions rather than the ordinary forms of pneumonitis. Dissections of the thigh stump in a group of the fatal cases demonstrated that a thrombus had formed in the femoral vein. It was also shown that the thrombus had developed at the distal or ligated end of the femoral vein. In some it extended upward for only a short distance, in others it had propagated into the iliac vein. In those incidences in which the stump had become infected, thrombophlebitis was found involving the lower segment of the vein. These findings indicated that the probable source of the emboli which were responsible for many of the pulmonary complications was from the femoral vein in the stump of the amputated limb. The controlling factor seemed to be the extent of thrombosis in the femoral stump. If the thrombus should propagate upward until a widened portion of the vein was reached there would be an excellent

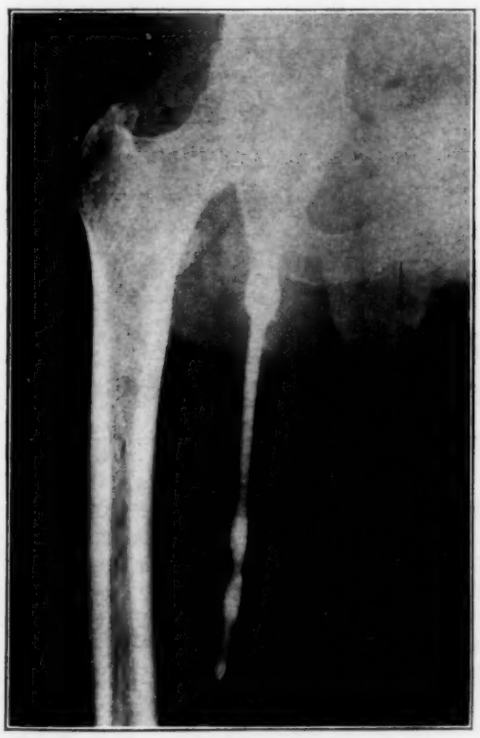

Fig. 1.—Venograph of normal femoral vein. Note widening of vein in upper portion.

chance for the dislodgment of a portion of the clot and the formation of an embolus. If a shower of small emboli should be thrown off and become lodged in the lungs, the pulmonary lesion would simulate pneumonia. If a larger emboli should be dislodged, infarction or massive embolism would result. There remained one important point: why should there be such a wide variation in the extent of the thrombosis in the stump of the femoral vein? An anatomic study of the femoral vein and its tributaries has provided an answer to this question.

The femoral vein is the continuation of the external iliac and is the largest peripheral vein. It begins at the

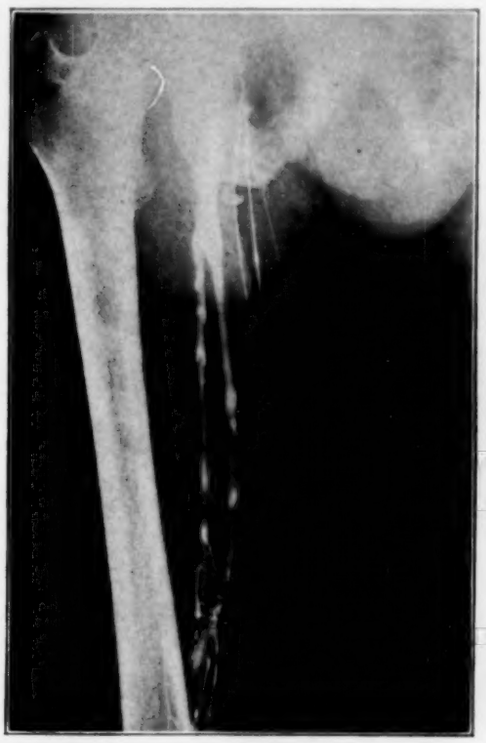

Fig. 2.—Venograph showing femoral vein with tributaries. Note extreme widening of femoral at point of entrance of deep profunda.

inguinal ligament and extends down the inner aspect of the thigh through Hunter's canal to become the popliteal vein (fig. 1). It receives the deep profunda, the saphenous and several lesser tributaries in its upper third and a variable number of smaller veins in the lower two thirds (fig. 2). The saphenous is quite constant in its course, is uniform in size and enters the femoral about 1½ inches below the inguinal ligament. The deep profunda, the major tributary, is quite variable in size and joins the parent trunk at inconstant levels. The branches of the profunda may all unite into a single vein or they may form a double trunk, each entering the femoral at different levels. There is also great variation in the size, number and distribution of the smaller or minor tributaries. While there is a wide variation in the distribution of the tributaries, the femoral presents one of two distinct patterns. In one group there are numerous tributaries, adequate in size, which enter the parent trunk at regular intervals, so that a stepladder arrangement is presented. This type then provides an abundant flow of blood into the femoral at all levels. Ligation at any point fails to cut off an adequate inflow of blood into the femoral stump. In this type thrombus formation is retarded and limited to the distal end of the vein (fig. 3 *A*). In the second group the minor tributaries are few in number, are small in size and enter the femoral at wide intervals. This often leaves a long segment of the lower portion of the femoral vein completely devoid of tributaries. In such cases stasis thrombosis is very likely to develop and fill the entire femoral stump following ligation, incident to thigh amputations (fig. 3 *B*).

Following these studies I began, as a routine measure, the preliminary high ligation of the femoral vein in all thigh amputations, Since it is not feasible to expose a very long portion of the femoral vein to determine the number of tributaries, it becomes necessary to ligate

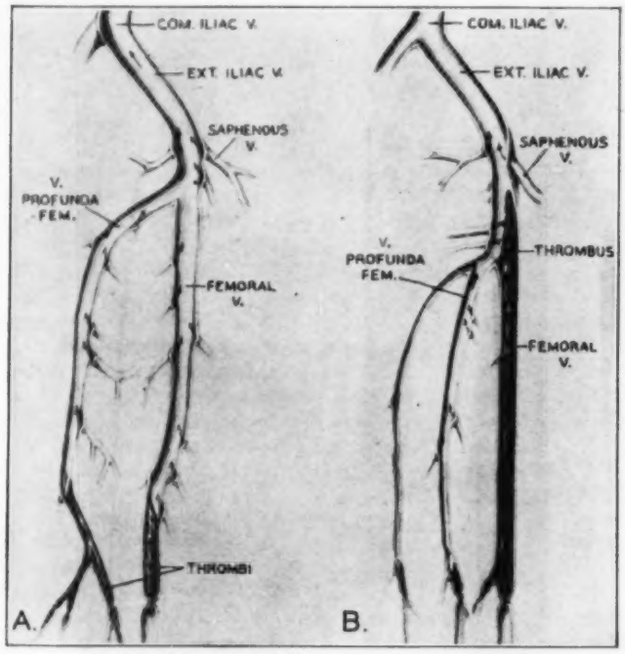

Fig. 3.—Schematic drawing of femoral vein and its tributaries: Thrombus formation after ligation of lower femoral vein: *A*, note limitation of thrombus at ligated end when tributaries are abundant. *B*, note propagation of thrombus when tributaries are small and few in number.

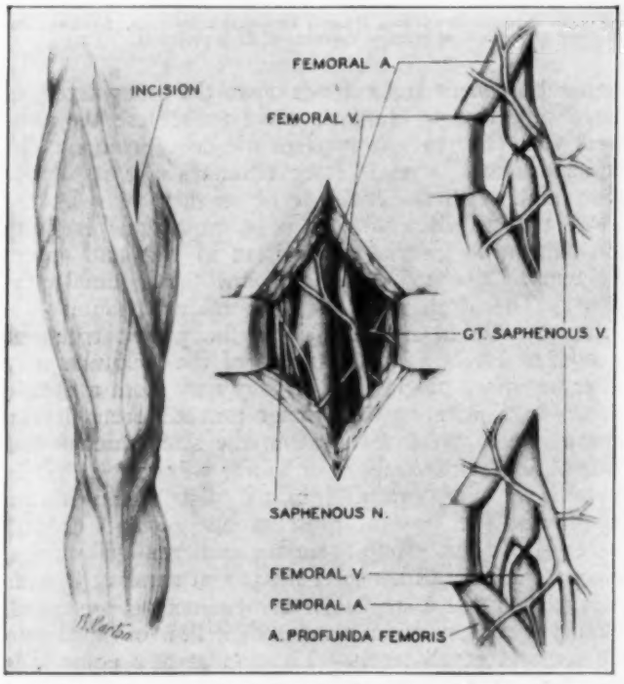

Fig. 4.—Technic of ligation of femoral vein in femoral triangle.

the vein in all cases in order to obtain security against those that are potentially liable to thrombus formation.

In a preliminary report I outlined the result of this procedure in twenty-seven thigh amputations.[3] In this communication I wish to report on eighty thigh amputations in which this procedure has been used. Because such excellent results have been obtained, I feel that a review of the technic of high ligation of the femoral vein is indicated.

The femoral vein is best exposed in the femoral triangle through a vertical incision placed directly over the vessels (fig. 4). The incision should be about 3 inches long and begins 1½ inches below the inguinal ligament. The saphenous vein is identified and followed down to its entrance into the femoral. At this point the femoral sheath is opened and the artery and vein exposed. The vein lies medial to and is partially overlapped by the artery. It is joined by several tributaries at this level, and these must be carefully protected. The femoral artery is retracted laterally and the vein gently exposed just below the entrance of the saphenous. The vein is freed sufficiently at this point to allow the

Fig. 5.—Venograph showing collateral venous circulation after high ligation of femoral vein. Note absence of large trunk.

passage of a ligature. It has been found that the most logical sites for ligation is just distal to the entrance of the saphenous vein. This point is easily located by following the saphenous through the cribriform fascia, and ligation at this level insures adequate inflow of blood above the ligature to prevent the formation of a thrombus. There are also abundant channels available for the return blood flow (fig. 5). Occasionally the deep profunda joins the femoral very near the saphenofemoral junction. In such instances it is best to ligate the femoral distal to the profunda. The femoral vein is large and its wall is relatively thin, and care must be exercised in freeing it from its bed. I have found that the passage of the ligature can be facilitated by clamping the vein at the selected site with a hemostat. The vein can then be lifted out of its bed sufficiently to allow the ligature carrier to pass completely around it with ease and safety. Because of the wide variation

3. Veal, J. R.: High Ligation of the Femoral Vein in Amputations of the Lower Extremities, J. A. M. A. **114**: 1616-1619 (April 27) 1940.

in the size of the vein and the limitation of exposure, it has been found that various size ligature carriers are needed. Each tray is set up with a series of curved needles with blunt points. The size needle to fit the particular case is selected and a silk ligature is passed around the vein and securely tied. The incision is then closed in the usual manner and attention is turned to the amputation.

Following amputation a loose dressing is applied and the patient placed under a heat cradle. The stump is not elevated. In practically all cases there has been a prompt readjustment of the venous return blood flow. However, in a few cases the stump has become swollen with pitting edema. Apparently this has been caused by the occurrence of thrombosis in the profunda vein. The edema has always subsided in about ten days and has not produced any further trouble. The wounds have healed as promptly as in those cases in which edema did not occur.

The value of preliminary high ligation of the femoral vein in preventing pulmonary complications in thigh

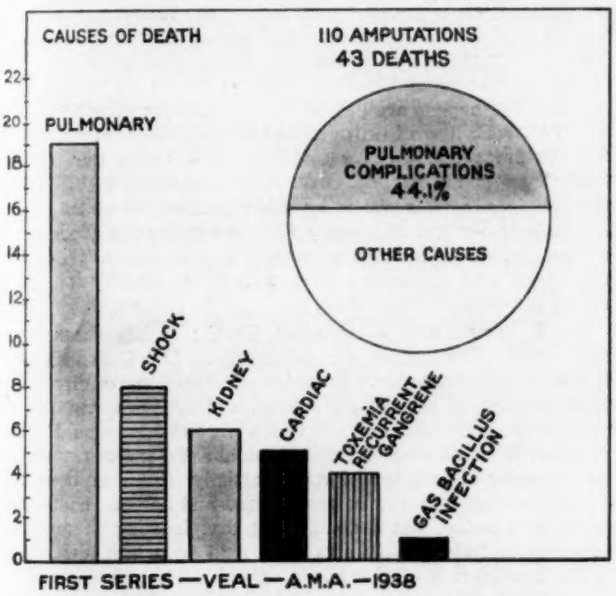

Fig. 6.—Incidence of pulmonary complications in one hundred and ten amputations for vascular gangrene.

amputations can best be presented by comparing a series of amputations in which it has been used with a similar group before this measure was instituted. In 1935 I presented a study of one hundred and ten amputations for arteriosclerotic gangrene, in which there were forty-three deaths. Pulmonary complications accounted for nineteen of the fatalities (fig. 6). Another series of one hundred and four amputations for the same condition was reviewed at a later date. In this series there were thirty deaths, of which fifteen were the result of pulmonary complications. In one hundred and fourteen thigh amputations performed without high ligation there were forty-eight deaths. Approximately 42 per cent of the deaths were the result of pulmonary complications. In the present series of eighty thigh amputations there were but fourteen deaths (fig. 7). Only 1 patient contracted any type of pulmonary complication. She had diabetes, with gangrene of the foot. On the second postoperative day lobar pneumonia set in, from which she later died (fig. 8). All the patients were indigent and were similar to the first groups with respect to age, duration of gangrene, general physical state, sex and color. The type of amputation was essentially the same in the two series. Low spinal anesthesia was frequently used in both groups and was the anesthetic of choice when not contraindicated. The only essential difference between the two series of cases

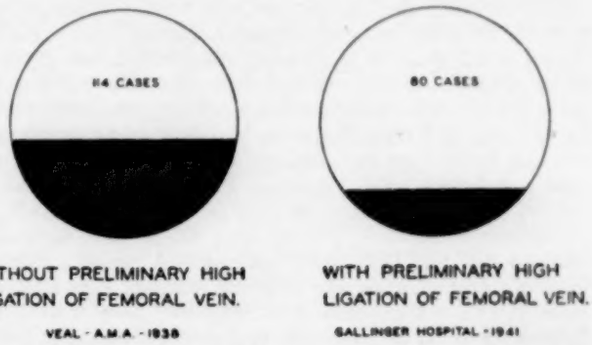
114 CASES
80 CASES
WITHOUT PRELIMINARY HIGH LIGATION OF FEMORAL VEIN.
WITH PRELIMINARY HIGH LIGATION OF FEMORAL VEIN.
VEAL - A.M.A. - 1938
GALLINGER HOSPITAL - 1941

Fig. 7.—Comparison of mortality rate in thigh amputations without and with high ligation of femoral vein: Black zone represents percentage of fatalities in each group. Without high ligation mortality rate is 42.1 per cent. With high ligation mortality rate is reduced to 17.5 per cent.

was the performance of preliminary high ligation of the femoral vein in the second group of cases. The striking reduction in occurrence of pulmonary complication in this series of eighty thigh amputations by the employment of high ligation of the femoral vein seems to have solved one of the most urgent problems in the surgery of vascular gangrene.

SUMMARY

Pulmonary complications are more frequent following thigh amputations than in any other field of surgery. Many of the pulmonary lesions are embolic in origin. The chief source of the emboli is from the femoral vein in the amputated stump. High ligation of the femoral vein before amputation closes this source of emboli. In two hundred and seventy-five major amputations without high ligation of the femoral vein 14.9 per cent of the patients died from pulmonary complications. In eighty thigh amputations with high ligation of the femoral vein there has been only one pulmonary complication.

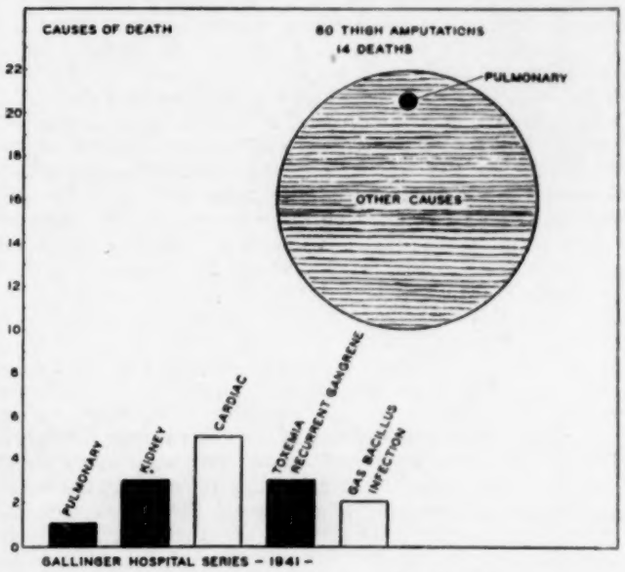

Fig. 8.—Mortality in eighty thigh amputations for vascular gangrene with high ligation of femoral vein.

ABSTRACT OF DISCUSSION

DR. GEZA DE TAKATS, Chicago: The paper of Dr. Veal emphasizes the importance of venous stasis in the formation of thrombi and consecutive emboli. Retardation of venous return has been demonstrated repeatedly on patients after operation or immobilization. The interference with venous return is especially pronounced in the frequently employed Fowler position, during which stasis is produced in the pelvis, in the groin and in the deep and muscle veins of the calves. To overcome this the postoperative Trendelenburg position, maintained from twenty-four to forty-eight hours, is truly a great improvement and can be used for such patients who are unable to carry out simple exercises. Dr. Lawrence Petersen has tabulated the mortality following major amputations at the Research and Educational Hospitals. There were 110 major amputations between 1927 and 1942, and 9 patients died, giving a mortality of 8 per cent. There was only one death of embolism, of a patient with polycythemia vera who had been treated with leeches up to the fifth day and died on the sixth, after the use of leeches was discontinued. Only 1 patient in this group had a ligation of the femoral vein. In our experience, then, pulmonary embolism does not occur frequently after amputations, the incidence being not more than 1 or 2 per cent. Recently I have attempted to study the clotting mechanism of patients by determining their response to heparin. Roughly, all individuals fall into one of three groups. Their response to heparin is normal, exaggerated or diminished. In spite of the great importance of venous stasis, one should not forget that coagulation of blood is favored in the postoperative state. Heparin or other anticoagulants obviously cannot be given to all postoperative patients, but the endangered group may be picked out by their response to heparin. For such patients all available measures against thrombosis must be carried out with the greatest vigor.

DR. EDGAR V. ALLEN, Rochester, Minn.: Theoretically there are three possible mechanisms for postoperative venous thrombosis. One of these is an increased tendency of the blood to clot. However, in spite of assiduous studies no one has shown conclusively that there exists such an increased tendency after operation. There are some conditions of the blood which predispose to venous thrombosis following operation, but the vast majority of patients who are operated on do not show significant changes in the coagulation of the blood after operation. A second factor is the possibility of trauma to veins. I am told that assistants do not lean on a femoral vein during a major operation and that usually no other trauma occurs. Yet it is known that after such operations as cholecystectomy thrombosis of the femoral vein may occur. For those who advocate the theory of trauma, there is some evidence in support as shown by the fact that the incidence of postoperative venous thrombosis following pelvic operations is three times as great as the incidence following operations on the upper part of the abdomen. There is no evidence that this trauma to veins is a significant, persistent cause of postoperative venous thrombosis. The third possibility is the question of slowed circulation of venous blood. How does this fit in with what is known about postoperative venous thrombosis? Similar studies on the circulation of blood in the veins of the upper extremities indicate that there is no significant slowing of the speed of circulation in the upper extremities. That might explain why postoperative venous thrombosis occurs so frequently in the lower extremities and so infrequently in the upper extremities. The fact that the maximum slowing of the venous circulation is on about the eighth to the twelfth postoperative day would fit in well with the observation that that is the period at which postoperative venous thrombosis occurs in the vast majority of instances. This slowed circulation of the blood in the veins would explain also why the administration of thyroid sharply decreases the incidence of postoperative venous thrombosis, and it would explain an observation which I have made that in approximately twelve hundred operations (sympathectomy) for hypertension performed by neurosurgeons there has not been a single instance of postoperative venous thrombosis. Sympathectomy greatly increases the speed of flow of blood through the arteries and through the veins. The evidence suggests that a slowed venous circulation is responsible for postoperative venous thrombosis. A word of caution about the interpretation of statistics: Postoperative venous thrombosis is known to occur infrequently, and it is possible that a large series of patients for whom nothing was done might show no postoperative venous thrombosis merely because it does occur infrequently.

DR. LYMAN W. CROSSMAN, New York: In my service at the City Hospital my associates and I have approached the matter of postoperative embolism in what might be considered a physiologic way. We try to prevent the formation of postoperative emboli. Dr. de Takats discussed retarding circulation and increasing circulation. What we do is stop circulation by Frederick M. Allen's method of applying a tourniquet to the extremity 6 or 8 inches proximal to the line of cutaneous incision, refrigerating the entire extremity with ice, and after two and a half hours perform an amputation with no other anesthesia. At the time of the operation we always find that the blood is fluid. We never see a blood clot. When the stump end is about ready to be closed and the tourniquet is taken off, the blood we see then is always in a liquid form. The examination of the blood drained from the specimen as it is removed has been examined and reported as being normal. Every one of the legs so treated has been examined under the microscope by Dr. James Lisa, our pathologist, and he has found no structural change as a result of the long refrigeration or the stasis and pressure brought about by the tourniquet. The tourniquet cuts off all circulation of blood and lymph and all nerve impulses. As most tourniquets are put on there is still an arterial trickle, which allows a flow of warm blood into a refrigerated extremity, and our precautions against this may explain why our patients have never had frost bite. Dr. Allen has always emphasized the inhibition of thrombosis by cold; and, as we stated in the *Archives of Surgery* in January 1942, our group has encountered no instance of thrombosis or embolism with this method. As our series now comprises over a hundred amputations, this experience appears significant.

DR. J. ROSS VEAL, Washington, D. C.: I have been interested in the freezing of the extremities. Dr. Crossman says it is a physiologic action. Speaking of physiology of circulation after freezing, if he cuts off arterial and venous circulation he creates an ideal situation in which thrombosis should occur provided it lasted long enough. Undoubtedly one can amputate an extremity after it is frozen, or partially frozen, without pain and the patient may return to the ward and be comfortable and carry on his diet, but I don't think that freezing in any way prevents thrombosis. It creates a field in which thrombosis might develop if it persisted long enough. There is one remark I should like to make about high ligation. It is known that clots from other parts of the body may lodge in the lungs. There have been cases in which the embolism came from the heart or some other vein of the body than that of the femoral stump, but I feel that the majority of the pulmonary complications following thigh amputations are embolic and that the emboli arise from the stump of the femoral vein.

High Degrees of Personal Liberty.—As a class doctors are independent people. A doctor usually works for himself; he wears no man's collar unless he is hired to work for a medical clinic, or unless he is a fashionable practitioner who toadies to the rich and so has passed under the golden yoke. Indeed, if it were not for the responsibility that every physician feels towards his patients, he would be as free as a bird in the air to go and come when he pleased and to take long vacations. If he has any doubts about the high degrees of personal liberty he enjoys in civilian life, a service with our armed forces will soon convince him. Patients may choose any physician they please and dismiss him at their pleasure, but they are not always aware that the doctor has the same privileges; there is no law or rule of medical ethics that compels him to undertake the care of any particular patient, or that prevents him from retiring—gracefully, of course—from the case if the individual proves uncooperative or unbearable. Although this privilege of dismissal is seldom invoked by doctors except as a last resort, it is frequently exercised by patients.—Irving, Frederick C.: Safe Deliverance, Boston, Houghton Mifflin Company, 1942.

HYPOCHROMIC ANEMIA IN PATIENTS WITH DEFICIENCY OF THE VITAMIN B COMPLEX

RESPONSE TO IRON THERAPY WITH AND WITHOUT YEAST

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VIRGINIA MINNICH, M.S.
ST. LOUIS
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T. D. SPIES, M.D.
CINCINNATI

Many clinicians have the impression that the response to iron therapy of patients with hypochromic anemia is enhanced if the vitamin B complex is administered concomitantly. Relatively expensive combinations of these two therapeutic agents have been prepared by pharmaceutical houses and are being extensively used. The reasoning behind this dual therapy accepts the recent impression that subclinical or subcritical deficiencies of the B complex are relatively common in the United States [1] and postulates that the circumstances which bring about iron deficiency may lead also to suboptimal intake of vitamins. It is assumed, furthermore, that vitamin deficiency may result either in poor absorption of iron from the intestinal tract or in its defective utilization for hemoglobin synthesis.

These ideas about the interrelationship of iron metabolism and the vitamin B complex germinate from three separate types of scientific evidence. In the first place, many investigators have frequently observed hypochromic anemias in patients with pellagra. Early studies indicated that they were more common than any other type,[2] but subsequent reports have shown that macrocytic and normocytic anemias also occur among pellagrins and that there is no special tendency toward coexistence with any one type.[3]

In the second place, Parsons [4] found that the iron deficiency anemia produced in rats on a milk diet can be cured with yeast as well as with iron and copper, but yeast of low iron content produced less satisfactory hemoglobin increases. Moreover, when Parsons and Hawksley [5] applied these observations to the treatment of nutritional (iron deficiency) anemia of infants they noticed that the yeast was not nearly as effective therapeutically as it had been in rats, and Ungley [6] from observations on adult human subjects with hypochromic anemia concluded that yeast or wheat germ preparations do not raise the hemoglobin level "whether or not the diet had been grossly defective."

In the third place, Fouts and his associates [7] have demonstrated that in puppies fed a diet deficient in pyridoxine (vitamin B_6) a hypochromic anemia develops which does not respond to iron and copper but improves dramatically when pyridoxine is given. Fouts's observations have been abundantly confirmed in experimental animals,[8] but instances of a similar anemia in man have not been reported.

Therefore, even though there have been suggestions that vitamin B and iron metabolism are intimately related, the evidence is not conclusive except for pyridoxine in experimental animals, and there are no satisfactory data in the medical literature to support the idea that administration of the vitamin B complex increases the therapeutic effectiveness of iron in man. The present investigation was undertaken in an attempt to clarify this point. Results will be presented under the following headings: (1) occurrence of hypochromic anemias in patients with deficiency of the vitamin B complex, (2) response of these patients to iron therapy alone and (3) their response to iron when supplemental amounts of the B complex were also given.

MATERIAL AND METHODS

Fifty adult patients with hypochromic microcytic anemia were found in the Nutrition Clinic of the Hillman Hospital in Birmingham, Ala., during the summers of 1940, 1941 and 1942. Only 5 of them were men. Almost all had been on a diet extremely low in the vitamin B complex [9] and, with but few exceptions, had had recurring deficiency diseases for years. Thirty-two of the 50 patients had clinical manifestations of a deficiency disease at the time of this study; 15 showed evidences of inadequacy of more than one member of the B complex. The diagnosis of each deficiency disease was made on the basis of clinical manifestations, since the levels of the various B vitamins in blood are not sufficiently altered in most cases of avitaminosis to have diagnostic significance.[10] Niacin (nicotinic acid) deficiency was recognized by the presence of pellagrous glossitis and dermatitis. The criteria accepted for the diagnosis of ariboflavinosis were the presence of cheilosis or cheilosis accompanied by lesions in the eye,[11] magenta tongue and sharklike skin about the nares. Multiple neuritis, confirmed in a few instances by biopsy of a peripheral nerve, was accepted as the principal clinical evidence of thiamine deficiency. However, patients with multiple neuritis also frequently exhibited

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From the Department of Internal Medicine, Washington University School of Medicine, St. Louis; the Department of Internal Medicine, University of Cincinnati School of Medicine, and the Nutrition Clinic, Hillman Hospital, Birmingham, Ala.

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the emotional instability and nervousness described by Frostig and Spies [12] and by Williams and Mason.[13]

Determinations of the erythrocyte count, hemoglobin value and reticulocyte percentage were made every twenty-four or forty-eight hours on those patients to whom iron was given; transportation difficulties prevented a few subjects from reporting for observation oftener than once each week. The hemocytometers and blood counting pipets used were standardized by the U. S. Bureau of Standards. Hemoglobin determinations were made by the Evelyn technic.[14] Reticulocyte preparations were made with both wet and dry methods.[15] Serum iron values were determined by the method of Moore, Minnich and Welch.[16]

HYPOCHROMIC ANEMIA IN PATIENTS WITH HYPOVITAMINOSIS B

Reference has already been made to the fact that hypochromic anemia has been observed by a number of investigators in patients with pellagra. However, all these surveys were made before ariboflavinosis was distinguished from the niacin deficiency aspects of pellagra and before it was recognized that multiple neuritis is also frequently a part of that syndrome. It is of interest, therefore, to record that hypochromic anemia was found with all three types of deficiency: niacin deficiency in 23 (46 per cent), ariboflavinosis in 20 (40 per cent), peripheral polyneuritis in 7 (14 per cent) and no recognizable deficiency in 18 (36 per cent). These figures total more than 100 per cent because two or all three types of deficiency were present in 15 patients. This distribution of these three deficiency diseases correlated well with their incidence in the Hillman Nutrition Clinic as a whole during these three summers of study. There was, therefore, no tendency for the hypochromic anemia to occur specifically with niacin, riboflavin or thiamine deficiency.

These results are in accord with published clinical and animal investigations. Williams and Mason,[13] for instance, noted in their cases of induced thiamine deficiency that any anemia that developed was of moderate degree and macrocytic. Patients with pellagra have macrocytic anemia at least as frequently as hypochromic,[3] and animals in which niacin deficiency is produced have not been observed to develop hypochromia of their red cells. Animals deficient in riboflavin apparently do not develop a hypochromic anemia [17] although administration of this vitamin does increase the rate of hemoglobin production by the anemic dog.[18] It is difficult to evaluate the literature regarding the association of hypochromia with ariboflavinosis because cheilosis, the most frequent manifestation of riboflavin deficiency, apparently occurs from other causes, particularly as the result of poorly fitting artificial dentures.[19] It is noteworthy that many of our patients were young (50 per cent under 40 years); 11 of the 20 with cheilosis had artificial dentures. In addition, fissures at the corners of the mouth have been described as one of the clinical features of hypochromic anemia.[20] There are two possible explanations for this: (1) either cheilosis may occasionally be caused by iron deficiency or (2) the patients with cheilosis had an unrecognized ariboflavinosis. The latter explanation appears possible, since all the reports describing fissures at the angles of the mouth as one of the manifestations of hypochromic anemia appeared before cheilosis was related to riboflavin deficiency. Certainly there has been abundant experience in the Nutrition Clinic of the Hillman Hospital that (1) the cheilosis seen there responds to riboflavin administration and (2) most patients with cheilosis do not have an anemia. Several of the patients with cheilosis and hypochromic anemia included in this study experienced temporary improvement of their lesions at an angle of the mouth during iron therapy, but the fissuring always recurred and responded subsequently to riboflavin. It would appear, therefore, that the cheilosis among these patients resulted from riboflavin deficiency. Murphy and Damarjian [21] came to a similar conclusion about 1 patient whom they observed.

Particular attention, however, should be given to the possibility that hypochromia in some of these 32 patients might have been caused by pyridoxine deficiency. Reference has already been made to the work of Fouts and others [22] which demonstrated that dogs fed a diet inadequate in pyridoxine develop a hypochromic microcytic type of anemia which does not respond to iron and copper but improves promptly when pyridoxine is given. These dogs, in addition, had a high serum iron level,[23] in contrast to the low serum iron values obtained when a state of iron deficiency exists.[24] If any of the patients included in this study had a pyridoxine deficiency, therefore, and if the manifestations of this deficiency are the same in man as in the experimental animal, then our patients should (1) have had a high serum iron value before therapy was begun, (2) have shown no hemoglobin rise when iron was given and (3) have responded specifically to pyridoxine administration. Not one of these three things was true. All patients had initial serum iron values below 0.050 mg. per hundred cubic centimeters, the range usually found in subjects with an iron deficiency and distinctly below the normal average of 0.09 to 0.12 mg. per hundred cubic centimeters.[24] All patients responded with a reticulocyte increase and hemoglobin rise when iron was given. Pyridoxine failed to produce these results. Therefore, if pyridoxine deficiency was present in any of the patients studied, it was not characterized by a hypochromic anemia.

Three factors seemed to be operative in the production of the hypochromic anemia found in this series of cases: (1) chronic blood loss, (2) lowered gastric acidity and (3) inadequate intake of iron. With three or four exceptions, all patients were shown to have either increased menstrual loss of blood or bleeding from the intestinal tract (hemorrhoids, hookworm infection, rectal stricture or peptic ulcer). Gastric analysis made on 10 of the subjects revealed either achlorhydria

12. Frostig, J. F., and Spies, T. D.: The Initial Nervous Syndrome of Pellagra and Associated Deficiency Diseases, Am. J. M. Sc. **199:** 268 (Feb.) 1940.
13. Williams, R. D., and Mason, R. L.: Further Observations on Induced Thiamine Deficiency and Thiamine Requirement of Man, Proc. Staff Meet., Mayo Clin. **16:** 433 (July 9) 1941.
14. Evelyn, K. A.: A Stabilized Photoelectric Colorimeter with Light Filters, J. Biol. Chem. **115:** 63 (Aug.) 1936.
15. Wintrobe, M. M.: Clinical Hematology, Philadelphia, Lea & Febiger, 1942, p. 58.
16. Moore, Carl V.; Minnich, Virginia, and Welch, Jo: Studies in Iron Transportation and Metabolism: III. The Normal Fluctuations of Serum and "Easily Split-off" Blood Iron in Normal Individuals, J. Clin. Investigation **18:** 543 (Sept.) 1939.
17. Patek, A. J., Jr.; Post, Joseph, and Victor, Joseph: Riboflavin Deficiency in the Pig, Am. J. Physiol. **133:** 47 (May) 1941.
18. György, Paul; Robscheit-Robbins, Frieda S., and Whipple, G. H. Lactoflavin Increases Hemoglobin Production in the Anemic Dog, Am. J. Physiol. **122:** 154 (April) 1938.
19. Ellenberg, Max, and Pollack, Herbert: Pseudo Ariboflavinosis, J. A. M. A. **119:** 790 (July 4) 1942.
20. Heath, C. W., and Patek, A. J., Jr.: The Anemia of Iron Deficiency, Medicine **16:** 267 (Sept.) 1937.
21. Murphy, R. G., and Damarjian, Edward: Riboflavin Deficiency with Idiopathic Hypochromic Anemia, Rhode Island M. J. **23:** 114 (July) 1940.
22. Fouts, Helmer and Lepkovsky.[7] Borson and Mettier.[8] Wolf and Seidel.[9] McKibbin, Schaefer, Frost and Elvehjem.[6]
23. Fouts, Helmer and Lepkovsky.[7] McKibbin, Schaefer, Frost and Elvehjem.[6]
24. Moore, C. V.; Doan, C. A., and Arrowsmith, W. R.: Studies in Iron Transportation and Metabolism: II. The Mechanism of Iron Transportation, J. Clin. Investigation **16:** 627 (July) 1937.

or hypochlorhydria in all but 1 instance. This lack of gastric acidity undoubtedly diminished the ionization and subsequent absorption of food iron.[25] Analysis of the diets eaten by patients of the Hillman Clinic have shown them to be low in iron.[9] It seems justifiable, therefore, to conclude that hypochromic anemia has no special pathogenic relationship to any of the types of vitamin B deficiency recognized to date in man and that when it occurs in association with these deficiencies it has resulted from combinations of such factors as blood loss, hypochlorhydria and poor food intake.

RESPONSE TO IRON THERAPY OF PATIENTS WITH HYPOCHROMIC ANEMIA AND DEFICIENCY DISEASE

The second part of this study concerns the response of 10 patients with hypochromic anemia and deficiency disease to the oral administration of iron alone. No other medication was permitted, vitamins of the B complex were rigidly avoided and the subjects were instructed to make no changes in their diets. The usual therapeutic doses of ferrous salts were given (exsiccated ferrous sulfate 0.8 Gm. daily) except in 2 instances (cases 3 and 6) when, for purposes of a separate investigation, the dose of ferrous sulfate was limited to 0.16 Gm. daily during the first twenty-one days. Data indicating the effectiveness of therapy are summarized in table 1. A reticulocyte peak of 6 per cent or more was observed in each case on the seventh to the fourteenth day of iron administration. The 6 patients with an initial hemoglobin value of 7.8 Gm. or less showed a daily rise in hemoglobin of from 0.13 Gm. to 0.22 Gm. per hundred cubic centimeters except in 1 young girl (case 4) with fever from a chronic pelvic infection, and it is well known that fever and infections interfere with the effectiveness of antianemic substances. Her daily rise in hemoglobin during a fifty-four day period was only 0.1 Gm. per hundred cubic centimeters. The average daily increase in the 6 cases was 0.163 Gm., or 1.06 per cent (15.4 Gm. considered as 100 per cent) for each 100 cc. of blood. This figure compares favorably with the average rise of 1.175 per cent previously reported for ferrous sulfate.[26] For the 4 subjects with an initial hemoglobin above 7.8 Gm., the rate of hemoglobin increase was somewhat slower: 0.087 Gm., or 0.565 per cent per hundred cubic centimeters a day. This average was lowered considerably by a woman (case 10) with rectal stricture who had diarrhea during most of the observation period. Even so, the rate is comparable again to the reported figure of 0.65 per cent.[26] It may be concluded, therefore, that the oral administration of ferrous sulfate to these 10 patients was therapeutically effective in bringing about satisfactory hemoglobin regeneration.

During the period of iron therapy, the lesions of the deficiency diseases usually remained relatively stationary. In a few instances there was slight improvement, particularly in the cutaneous lesions of patients with pellagra, but to no greater degree than is frequently seen near the end of the summer in the Nutrition Clinic of the Hillman Hospital. In several instances the lesions became worse. However, after these observations had been completed specific vitamin therapy with niacin, riboflavin or thiamine never failed to correct the clinical manifestations of the deficiency.

25. Moore, C. V.; Arrowsmith, W. R.; Welch, Jo, and Minnich, Virginia: Studies in Iron Transportation and Metabolism: IV. Observations on the Absorption of Iron from the Gastrointestinal Tract, J. Clin. Investigation **18**: 553 (Sept.) 1939.

26. Conferences on Therapy: Treatment of Blood Disorders: I. Iron Therapy, J. A. M. A. **114**: 2207 (June 1) 1940.

Case 3 in table 1 will be presented in detail.

CASE 3.—A woman aged 38, a native of Alabama, had experienced her first attack of pellagra at the age of 24. Since then she had had at least mild symptoms of deficiency disease nearly each year. She was observed carefully in the clinic during the summer of 1939, at which time she had (1) tenderness of the muscles of her legs with severe burning of the soles of her feet and skin over her face, neck, arms and legs, (2) nervousness and emotional instability, (3) cheilosis, (4) burning substernally and of her tongue and (5) a fiery red edematous tongue. Her mouth felt "scalded," and even water was difficult to drink. The consequent difficulty in eating accentuated the inadequacy of her already poor diet. Riboflavin, administered first, corrected the cheilosis but failed to influence the other signs and symptoms. When thiamine hydrochloride was also given the paresthesias disappeared, her appetite improved and her emotional instability was less evident, but the glossitis persisted. Finally niacin was given, and her mouth symptoms improved. Vitamin therapy was discontinued after several weeks.

When she reported again in 1940, the glossitis, cheilosis and paresthesias had returned. She had a "glimmer in front of her eyes" and felt at night as if something was obstructing her vision. Fatigue was pronounced. She also complained that her finger nails were brittle and stated that, while her menses began regularly at twenty-eight to thirty day intervals, the menstrual flow was excessive and frequently lasted for two to three weeks.

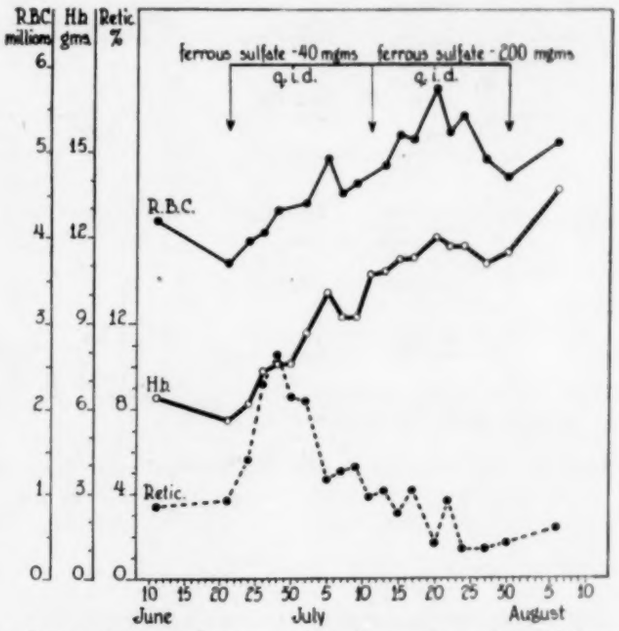

Chart 1 (case 3).—Response to iron therapy of a patient with hypochromic anemia, niacin deficiency, ariboflavinosis and multiple neuritis.

Physical examination was essentially negative except for the cheilosis, glossitis and pigmentation of the skin of both arms and legs. Pelvic examination showed only an old laceration of the cervix. Reflexes were physiologically active. Laboratory studies revealed a hypochromic microcytic anemia with an erythrocyte level of 3,960,000 cells and a hemoglobin value of 5.9 Gm. Her red cells were microcytic (51 cubic microns) and hypochromic (mean corpuscular hemoglobin concentration of 28 per cent). The Kahn reaction was negative.

On June 21, 1942 she was given ferrous sulfate 40 mg. four times a day. One week later a characteristic pellagrous dermatitis made its appearance on both ankles. Meanwhile, a reticulocyte response developed; a peak value of 10.6 per cent was reached on the eighth day (chart 1). After three weeks on this relatively small amount of iron the dose was increased to 200 mg. of ferrous sulfate four times a day. The red blood cell count returned to normal and the hemoglobin level rose to 13.7 Gm., a daily increase of 0.2 Gm. per hundred cubic centimeters of blood. Coincident with the improvement in

her anemia, her appetite became better, most of the fatigue disappeared and paresthesias were less troublesome. However, the glossitis, dermatitis of the ankles and cheilosis persisted throughout the whole observation period.

can absorb iron and utilize it effectively to build new hemoglobin, they do not eliminate the possibility that yeast might enhance the therapeutic response to iron. Accordingly, 4 patients were given iron alone for four-

TABLE 1.—*Effectiveness of Iron Therapy in Patients with Iron Deficiency Anemia and Deficiency of the Vitamin B Complex*

					Results of Therapy						
Case	Patient	Manifestations of Vitamin Deficiency	Vitamin Apparently Deficient	Age, Years	Daily Dose of Ferrous Sulfate, Gm.	Day of Therapy	Erythrocytes, Millions	Hemoglobin, Gm. per 100 Cc.	Av. Daily Hemoglobin Increase, Gm. per 100 Cc.	Reticulocytes, per Cent	Cell Volume, per Cent	Comment
1	A. B.	Glossitis, dermatitis	Niacin	28	0.8 *	0	3.41	6.3		2.0	25	Iron taken only for 21 days
						9	4.18	7.6	0.13	8.7		
						35	4.21	10.7		1.8		
2	C. B.	Glossitis, dermatitis	Niacin	33	0.8	0	4.49	7.8		2.2	29	Increased menstrual blood loss
						11	4.31	8.6	0.16	6.7		
						25	4.89	11.9		2.8	39	
						34	5.05	12.1		1.7		
3	B. F.	Glossitis, dermatitis, cheilosis	Niacin, riboflavin	38	0.16 for 21 days, 0.8 thereafter	0	3.96	5.9		3.7	21	Profuse menstrual flow
						8	4.32	7.6	0.20	10.6		
						27	5.17	11.3		4.2	40.5	
						47	5.11	13.7		2.4		
4	E. M. J.	Glossitis, dermatitis, cheilosis	Niacin, riboflavin	20	0.8	0	4.38	7.8		0.8	33	Fever from chronic pelvic infection
						9	4.18	8.3	0.10	8.4		
						54	4.93	13.4		1.2	44	
5	U. G.	Dermatitis, cheilosis	Niacin, riboflavin	27	0.8	0	4.40	8.8		3.0	30.5	Profuse menstrual flow
						7	4.37	9.2	0.08	12.0		
						39	5.42	11.8		2.8	38	
6	R. W. H.	Glossitis, polyneuritis	Niacin, thiamine hydrochloride	31	0.16 for 21 days, 0.8 thereafter	0	3.54	7.1		2.6	23	Profuse menstrual flow
						14	3.88	8.4	0.17	9.4		
						29	4.70	12.1		1.4	40	
7	E. R.	Cheilosis	Riboflavin	32	0.8	0	4.20	8.9		1.8	32.5	Profuse menstrual flow; myoma
						11	4.68	10.5	0.10	6.3		
						28	4.87	11.8		2.8	40	
8	L. G.	Cheilosis, shark skin appearance of skin of nose	Riboflavin	53	0.8	0	4.44	8.7		2.1	35	
						34	5.37	12.8	0.12	2.0	42	
9	D. S.	Cheilosis	Riboflavin	42 *	0.8	0	4.92	7.6		3.1	31	Profuse menstrual flow
						10	4.97	9.6	0.22	6.0		
						21	5.02	12.3		2.5	42	
10	A. W.	Multiple neuritis	Thiamine hydrochloride	38	0.8	0	3.69	7.9		3.0	29	Profuse menstrual flow; rectal stricture; took iron irregularly
						14	3.58	8.0	0.05	7.3		
						50	3.94	10.5		1.9	34	

* Ferrous sulfate used was exsiccated.

TABLE 2.—*Effectiveness of Iron Supplemented with Brewers' Yeast in the Treatment of Hypochromic Anemia and Deficiency of the Vitamin B Complex*

						Results of Therapy						
Case	Patient	Manifestations of Vitamin Deficiency	Vitamin Apparently Deficient	Age, Years	Type of Iron Salt Taken	Daily Dose, Gm.	Day of Therapy	Erythrocytes, Millions	Hemoglobin, Gm. per 100 Cc.	Av. Daily Hemoglobin Increase, Gm. per 100 Cc.	Reticulocytes, per Cent	Cell Volume, per Cent	Comment
11	V. C.	Dermatitis, multiple neuritis	Niacin, thiamine hydrochloride	29	Ferrous gluconate	1.2	0	3.79	7.0		2.0	26	Occult blood in stools; intermittent diarrhea; no parasitic ova found
							9	4.08	8.2		6.2		
					Brewers' yeast added after 14 days	75.0	15	4.22	9.2	0.17	3.7		
							24	4.70	10.6		3.5		
							34	4.81	12.7		1.4	44	
12	E. L.	Glossitis, cheilosis	Riboflavin, niacin	67	Ferrous gluconate	1.2	0	3.70	6.0		2.0	24	Bleeding from hemorrhoids
							9	3.85	7.4		6.7		
					Brewers' yeast added after 14 days	75.0	15	4.03	7.5	0.17	5.2		
							24	4.43	10.5		2.6		
							35	4.69	11.9		1.0	39	
13	A. H.	Dermatitis, glossitis	Niacin	44	Ferrous gluconate	1.2	0	4.50	9.4		1.6	32	Increased menstrual blood loss
							9	5.10	11.0		5.6		
					Brewers' yeast added after 14 days	75.0	15	5.27	12.2	0.11	2.4		
							25	5.21	12.7		1.6		
							35	5.42	13.2		2.4	43	
14	E. McD.	Cheilosis	Riboflavin	42	Ferrous gluconate	1.2	0	4.55	9.3		2.6	33	
							8	4.69	9.8		4.6		
							15	4.90	10.2	0.018	1.4		
					Brewers' yeast added after 14 days	75.0	23	5.20	11.3		2.2		
							33	5.18	12.2		0.4	44	

THERAPEUTIC EFFECTIVENESS OF IRON SUPPLEMENTED WITH YEAST IN PATIENTS WITH HYPOCHROMIC ANEMIA AND DEFICIENCY OF ONE OR MORE OF THE B COMPLEX VITAMINS

While the foregoing observations establish the fact that patients with hypochromic anemia and a concomitant deficiency of one or more vitamins of the B complex

teen days and immediately thereafter iron supplemented with brewers' yeast for an additional fourteen days. This was done for two reasons: If the yeast increased the effectiveness of iron therapy then (1) a second reticulocyte response should occur during the second therapeutic period and (2) the rate of hemoglobin regeneration should be more prompt than when iron alone was given.

Data on these 4 patients are presented in table 2. Iron was given as 1.3 Gm. of ferrous gluconate daily. Brewers' yeast [27] was administered in 25 Gm. doses three times a day. No secondary reticulocyte rise developed following the addition of yeast, and the average daily hemoglobin increase was not greater than in those patients to whom iron alone was given (table 1). The average rate for the 2 subjects with initial hemoglobin values below 7.8 Gm. was 0.17 Gm., or 1.1 per cent per hundred cubic centimeters of blood a day, and for the 2 with initial levels above 7.8 Gm., 0.099 Gm., or 0.064 per cent a day. There was, therefore, no evidence that the brewers' yeast had any additive effect in promoting a more rapid hemopoietic response.

The clinical abstract of case 11 (table 2) follows:

CASE 11.—V. C., a housewife aged 29, a native of Alabama, felt well until the summer of 1940, when she "passed stomach worms" in her stool. She complained of fatigue, occasional bouts of fever and diarrhea. She delivered her third child in January 1942. During the last several months of her pregnancy she noticed shortness of breath, unusual weakness, soreness of her tongue, vertigo, burning and aching of her eyes and anorexia. These symptoms persisted after her pregnancy had been terminated, and she began to lose weight. On several occasions she noted that her stools were black. There was constipation and a nocturia of two to three times. In May a pellagrous dermatitis appeared on her arms and hands. Her diet contained no green vegetables, no fresh fruit, no milk, no meat except salt pork and only an occasional egg. There had been no menstrual irregularities.

On physical examination the patient was pale and well developed. Her skin was dry and pigmented on her neck, face and arms. A scaly pellagrous dermatitis was present on the arms and legs. The tongue was pale, slick and atrophic. There were no fissures at the angles of her mouth. The head and neck otherwise were normal, as were also her chest and abdomen. The heart was not enlarged, sounds were of good quality and no murmurs were present. The blood pressure was 100 systolic and 70 diastolic. The pulse was regular, with a rate of 72. Reflexes were physiologically active and equal.

Laboratory studies showed 3,790,000 red blood cells, hemoglobin value 7 Gm., hematocrit 26 per cent and reticulocytes 2 per cent. Erythrocytes were microcytic (67 cubic microns) and hypochromic (27 per cent mean corpuscular hemoglobin concentration). The urine was normal except for a trace of albumin. The Kline reaction was negative. The stools contained occult blood, but no parasites or their ova were found.

From July 13 to Aug. 6, 1942 she was given 0.325 Gm. of ferrous gluconate four times a day. On the ninth day a reticulocyte peak of 6.2 per cent was reached. Twenty-five Gm. of brewers' yeast taken three times a day was added as a supplement to the iron on July 17. No secondary reticulocyte increase was noted. The red blood cell count and the hemoglobin level rose to 4,810,000 and 12.7 Gm. respectively. With iron alone the patient's anorexia and some fatigue disappeared, but the dermatitis did not disappear until July 31, fifteen days after yeast had been added.

These results indicate that brewers' yeast does not add to the effectiveness of iron therapy for hypochromic anemia. It is felt that much of the desire to combine other substances like copper, liver and brewers' yeast with iron for the treatment of hypochromic anemia in adult patients has resulted because iron is frequently used in the treatment of anemias which are not hypochromic. Hypochromia is the one readily detectable evidence of iron deficiency, and iron has therapeutic value only when a state of iron deficiency exists.[28] It has never been shown to be effective in the treatment of normochromic anemias with or without supplements. We have never seen an adult patient with hypochromic anemia who would not respond satisfactorily to iron alone unless fever, infection or a severe diarrhea was also present.

27. The brewers' yeast powder contained 0.18 mg. of thiamine, 0.06 mg. of riboflavin and 0.4 mg. of niacin per gram.

28. Round Table Discussion on the Therapeutics of Anemia, J. Pediat. 17: 547 (Oct.) 1940.

SUMMARY AND CONCLUSIONS

1. Thirty-two patients with hypochromic anemia were observed in whom niacin deficiency, ariboflavinosis or multiple neuritis was also present. Fifteen of these subjects had lesions of more than one type of deficiency disease. There was no tendency for hypochromic anemia to occur specifically in association with any one of these three deficiency states.

2. If pyridoxine deficiency occurred among the patients in the Nutrition Clinic of the Hillman Hospital it was not accompanied by hypochromic anemia with high serum iron levels.

3. Iron therapy alone produced a satisfactory reticulocyte response and rate of hemoglobin generation.

4. Brewers' yeast had no demonstrable effect in increasing the efficacy of iron therapy.

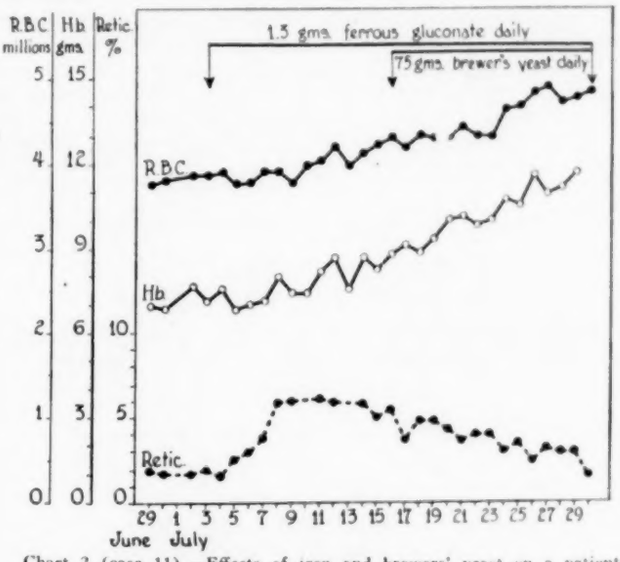

Chart 2 (case 11).—Effects of iron and brewers' yeast on a patient with hypochromic anemia, niacin deficiency and multiple neuritis.

5. The degree and type of vitamin B complex deficiency seen among these patients did not detectably interfere with iron absorption and utilization.

ABSTRACT OF DISCUSSION

DR. WILLIAM DAMESHEK, Boston: The paper is one of the first to debunk the vitamins. Vitamin therapy has become almost an obsession. Almost every case of anemia and almost any other condition which might be mentioned is now being treated with vitamins. To have Dr. Moore show that the vitamin B complex is not essential in the treatment of hypochromic anemia represents one of the first steps to make the pendulum swing the other way. Iron, liver extract and the vitamin B complex are essentially intracellular enzymatic materials which have to do with oxidation reduction mechanisms within the body cells. Deficiencies in iron, liver extract and vitamin B complex may result in similar objective phenomena relating to the skin, the tongue, the corners of the mouth and the fingernails. Cheilosis is considered by some to be pathognomonic of riboflavin deficiency, although I believe this is an exaggeration. About twelve years ago when we reported our cases of chronic "idiopathic" hypochromic anemia, we directed attention to lesions at the corners of the mouth then called "la perlèche." A deficiency in various types of intracellular enzymatic substances (fractions of the vitamin B complex) may produce changes at the mucocutaneous junctions at the corners of the mouth. I should like to know if Dr. Moore has any "yardsticks" by which

to tell whether patients with cheilosis actually have ariboflavinosis or some other deficiency. It is certain that some persons not only have a vitamin B complex deficiency but an iron deficiency as well. Doctors frequently ask "Since combined deficiencies are common, why not give a combination of the various drugs?" I always like to combat that. I like to reserve liver extract for pernicious anemia (liver extract deficiency), vitamin B complex for vitamin B deficiency and iron for hypochromic anemia. The vitamin B complex, as Dr. Moore and his collaborators pointed out, has apparently nothing to do with iron deficiency. If one has a case of chronic hypochromic anemia it should be treated with adequate doses of iron. The addition of vitamin B complex has been without value, in my experience.

DR. CARL V. MOORE, St. Louis: What Dr. Dameshek has said about the difficulties of diagnosing riboflavin deficiency is correct. It so happened that, during a part of the time that these studies were being made, determinations of riboflavin were made on samples of blood and muscle obtained from some of the patients. These determinations did not make the diagnosis more definitive. Therefore we are forced to say in support of the diagnosis of riboflavin deficiency in these people who had cheilosis that (1) their cheilosis was not improved when they were given iron alone and that (2) their cheilosis did disappear when subsequently they were given adequate therapeutic doses of riboflavin. I realize how unsatisfactory it is to make a diagnosis of a disease on the basis of response to therapy, but at the present time, it seems to me, therapeutic response is the best criterion we have for substantiating the diagnosis of riboflavin deficiency.

EPIDEMIC KERATOCONJUNCTIVITIS

CLINICAL AND EXPERIMENTAL STUDY OF AN OUTBREAK IN NEW YORK CITY

FURTHER OBSERVATIONS ON THE SPECIFIC RELATIONSHIP BETWEEN A VIRUS AND THE DISEASE

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Information concerning epidemic keratoconjunctivitis has, for the most part, been limited to clinical descriptions. Because the incidence of the disease in the United States has increased rapidly since its appearance in California two years ago, further information on the status of the etiologic agent and its mode of spread is desirable.

Initial efforts in this direction were made when, early in 1942, a few cases were observed in New York City and a virus was isolated.[1] The present investigation deals with 80 cases examined and treated at the office of a local ophthalmologist. These cases were studied from the clinical, epidemiologic and experimental aspects.

CLINICAL ASPECTS

While epidemic keratoconjunctivitis is certainly a distinct clinical entity, and while it has a well defined symptomatology in fully developed cases, it should be stressed that the beginning signs and symptoms are often indefinite and vary so greatly that in the early stages the disease may be easily confused with other acute eye diseases, especially acute conjunctivitis. Since the onset is so variable, it is suggested that the possibility of epidemic keratoconjunctivitis be considered in any case of acute conjunctivitis which does not show improvement after ten days (especially if there is little or no secretion present).

In the group of cases under discussion, the signs and symptoms which were the basis for diagnosis were as follows: Initially there was a hyperemia and swelling of the palpebral conjunctiva. Very often the conjunctiva resembled that seen in ordinary follicular conjunctivitis. At this stage the patient complained of irritation, a "sandy feeling" as if a foreign body was present, and tearing. After twelve to thirty-six hours the bulbar conjunctiva also became congested and hyperemic, and varying degrees of edema of the lids (particularly of the upper lid) were often present. Occasionally the amount of edema was so extreme that it was difficult to open the eyes for inspection. In a small number of cases pseudomembranes appeared, usually on the conjunctiva of the lower lid. When these pseudomembranes were removed with a swab, bleeding points were revealed.

The intensity and sequence of appearance of the objective signs mentioned varied greatly in the cases studied. It must be stated that the initial symptoms had no bearing on the duration or intensity of the disease. As a matter of fact, eyes which showed violent symptoms in the beginning occasionally cleared up fairly rapidly and without resultant visual impairment.

In addition to the clinical picture described, two conditions were so often present that together they were considered pathognomonic for epidemic keratoconjunctivitis in this study:

1. There was practically no discharge from the conjunctiva.

2. Shortly after the onset of the inflammation of the conjunctiva, a swelling of the preauricular nodes appeared. Occasionally the submaxillary and cervical nodes also were enlarged.

In 34 of the 80 cases, i. e. 42.5 per cent, the second eye became involved after a varying period of time. As a rule the course of the disease in the second eye was much shorter and the inflammation considerably less than in the first eye.

Corneal Involvement.—This was a frequent and serious complication. It occurred in many cases without any signs of pain or photophobia or other subjective or objective warning. Corneal infiltrations developed in 42 of 80 cases, or 52.5 per cent. The time interval between the onset of the disease and the involvement of the cornea varied between five and thirty-eight days, with an average period of fourteen days. Usually the first sign of corneal involvement was the appearance of several tiny punctate infiltrates of the cornea in the subepithelial layer. In no case did abrasions, superficial ulcers or lesions of the surface epithelium occur at the points where the infiltrates later developed. The corneal epithelium was always intact and did not stain with fluorescein. In the majority of cases the corneal infiltrates were located on the exposed part of the cornea, i. e. within the confines of the palpebral fissure, and usually in the pupillary area.

It has been asserted by some observers that an eye affected with epidemic keratoconjunctivitis should be closed in order to prevent the development of erosions

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From the Departments of Ophthalmology and Bacteriology, Columbia University College of Physicians and Surgeons, and the Institute of Ophthalmology, Presbyterian Hospital.

This investigation was carried on in informal collaboration with the Commission on Neurotropic Virus Diseases, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army.

1. Sanders, Murray: Epidemic Keratoconjunctivitis, Arch. Ophth. **28**: 581 (Oct.) 1942. Sanders, Murray, and Alexander, R. C.: J. Exper. Med. **77**: 71 (Jan.) 1943.

or of superficial ulcers and consequently of corneal infiltrates. Following this suggestion, the eyes of a considerable number of patients were kept covered for a long period of time, but this did not prevent the development of corneal lesions. Once the cornea became involved, the opacities failed to absorb to any considerable degree and were present after a period of six months. For this reason it seems likely that in most of the cases observed in this series, unlike those studied elsewhere,[2] absorption of corneal opacities may not take place.

In spite of the fact that corneal opacities were present, however, many of the patients still enjoyed 20/20 vision. However, in 14 of the 42 cases with corneal involvement impairment of vision from 5 to 15 per cent was observed. The degree of impairment of vision in these cases was distributed as shown in table 1. This evaluation of visual impairment was possible because records of patients' vision both before and after the disease were available, and routine visual examinations were carried out at the patients' first visits.

Systemic Manifestations.—Since in previous experience with epidemic keratoconjunctivitis an occasional patient had complained of systemic symptoms, an attempt was made to determine as exactly as possible what systemic symptoms, if any, were manifested by the patients in this investigation, and whether these manifestations were related to the ocular disease. Careful questioning of each patient revealed that headache and "night pain," fever and malaise were more or less common.

By far the most common symptom was the headache which 49 patients (61.2 per cent) described. As a rule, the headache was moderately severe and was not relieved by analgesics. The most frequent description was of a dull pain extending over the fronto-occipital areas. The headache, which appeared shortly after the onset of conjunctivitis, lasted two to three days in "moderate" cases and about four days in "severe" cases. The 9 patients with severe headaches, and 4 of the patients with moderately severe headaches, could not sleep because of this symptom and consequently described it as a "night pain." The patients felt quite certain that the headaches were associated with the keratoconjunctivitis.

The extent to which other symptoms were present is seen from the following data: Five patients reported that they had been definitely feverish shortly after the onset of the conjunctivitis, but no record of rise in temperature was kept by either patient or physician. Twelve patients apparently suffered from moderate malaise and 14 from severe malaise, making a total of 26 cases, or 32.5 per cent. All these patients were quite definite in their statements and described the symptom as "not feeling well" or having an "achy feeling."

Preauricular lymph node enlargement is a diagnostic criterion of epidemic keratoconjunctivitis, but because of its relationship to systemic involvement and immune response it may be considered with the systemic manifestations. In the present series only 5 patients did not have distinctly palpable regional nodes at the time they were seen by the examining physician. The enlargement and tenderness of the nodes persisted from one week to several months after the onset of the conjunctivitis. In 56 cases (70 per cent) there was moderate enlargement, and the node diameters varied from approximately 1 to 1.5 cm. In these cases involvement was generally limited to the preauricular glands. In addition, definitely enlarged glands, with diameters of approximately 2 cm., were present in 17 cases. Other regional lymph channels were commonly involved when the preauricular gland was very large, and in most of the latter 17 cases the submental and cervical nodes also were palpable. It was in this group that malaise was most common.

It might be well to point out at this time that 3 patients who had severe systemic symptoms had a mild ocular disease. On the other hand, 19 patients had both severe systemic and severe ocular symptoms. It should be noted that no patient had a severe ocular disease without accompanying systemic symptomatology.

Disability and Course of the Disease.—Disability varying from one to eight weeks was suffered by 57 patients (71.2 per cent). In table 2 the loss of time from work is shown; these figures do not, of course, reveal the loss of efficiency, which in many cases was present for periods longer than those indicated.

TABLE 1.—*Degree of Impairment of Vision*

Degree of Visual Impairment	Number of Cases
5 per cent	3
10 per cent	5
15 per cent	6

TABLE 2.—*Loss of Time from Work*

Disability in Weeks	Number of Patients
0	23
1	5
2	15
3	10
4	16
5	8
6	2
8	1
Total	80 cases

It is of interest to note that, of the 57 patients who suffered disability, 24 had no corneal involvement. More than half of this group of 24 (16 patients) were kept from work because of systemic reactions and general discomfort which could be traced to the eye. The remaining 8 patients were kept from work only because of ocular discomfort. The majority of patients who suffered one or two weeks' disability is to be found in the group who complained of systemic symptoms without corneal involvement (15 of 20 patients), whereas those patients (27 of 37) who lost three, four, five, six or eight weeks from work had, for the most part, severe corneal involvement.

In general we appeared to be dealing with a moderately severe outbreak, as judged by disability, systemic involvement and ocular symptomatology. In this respect it should also be noted that 28 patients developed a bilateral keratoconjunctivitis; the second eye of 21 of the 28 patients (75 per cent) became involved within a three to seven day period after the appearance of symptoms in the first eye.

It was impossible to compute the mean duration of epidemic keratoconjunctivitis in the present study because many of the patients are still under observation, and others did not return to the physician's office when they felt better or when they returned to work.

2. Hogan, M. J., and Crawford, J. W.: Am. J. Ophth. **25**: 1059 (Sept.) 1942. Rieke, F. E.: Epidemic Conjunctivitis of Presumed Virus Causation, J. A. M. A. **119**: 942 (July 18) 1942.

Treatment.—It was found that strong antiseptic solutions did more harm than good. A mild solution of boric acid or a mild solution of zinc sulfate gave temporary subjective relief. Large doses of sulfathiazole and sulfadiazine given orally, and sulfathiazole applied locally, had no effect. Intradermal injection of tuberculin did not hasten the absorption of corneal infiltrations.

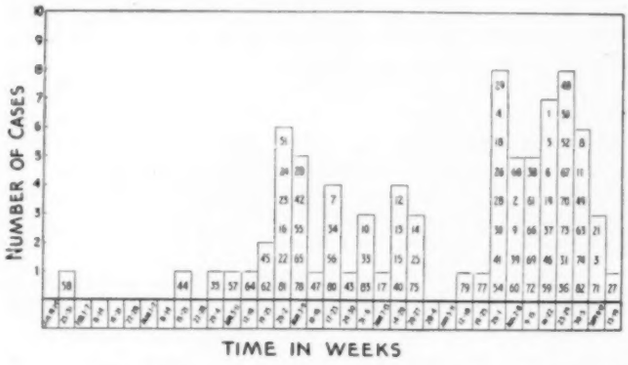

Chart 1.—Incidence of epidemic keratoconjunctivitis. Each number represents a patient.

The routine procedure which appeared to give some relief consisted of cold compresses applied locally and mild solutions of boric acid or zinc sulfate instilled in the eye after each compress. Ethylmorphine hydrochloride 0.5 to 2 per cent for local use on the eye was prescribed routinely in order to bring about absorption of the corneal opacities. In addition to this local treatment, riboflavin was given by mouth, usually 15 mg. a day. As stated previously, no noticeable absorption resulted in any case.

EPIDEMIOLOGIC ASPECTS

In analyzing the cases which constituted the present outbreak, the first observation of possible significance was that the initial case was observed in the office on Jan. 27, 1942 with a history of keratoconjunctivitis of three days' duration. This appeared to be a mild case, without corneal involvement. The acute phase lasted until February 17, when the patient was considered "cured" and was discharged. In spite of the apparent mildness of the infection, the ocular discomfort and headaches were sufficiently pronounced so that the patient did not work for two weeks. As can be seen from chart 1, the next 4 cases occurred in a rather sporadic fashion, and it was not until fourteen weeks after the appearance of the first case that a distinct increase in the incidence of the disease was noted, with 6 new cases appearing during the week of April 26 and 5 new cases in the week of May 3. From that point on, the incidence of epidemic keratoconjunctivitis among patients in this study fluctuated. It reached a peak during the month of August, and at this point the aid of the Ophthalmological Institute of Presbyterian Hospital was enlisted. The incidence then fell rapidly to only 1 new case during the week of September 13. No new cases have developed in the office practice since that date.

Since it was noted that epidemic keratoconjunctivitis appears in shipyards and industrial centers, an effort was made to classify the patients according to occupations. It was found that there was a wide variety of occupations (table 3). Although the same industrial company is apparently represented frequently, the individual cases were scattered in subplants and branch offices throughout the city, and, as far as could be determined, the patients had absolutely no contact with one another outside the physician's office.

Further investigation revealed that only 10 of the 80 patients (12.5 per cent) had come to the office because of epidemic keratoconjunctivitis. The other 70 patients originally complained of foreign bodies, ocular abrasions and wounds (usually of the cornea), acute or subacute conjunctivitis and corneal ulcers. Seven cases fell into a miscellaneous group of symptoms which included thrombosis of the central vein, chalazion, subacute conjunctival hemorrhage, allergic acute conjunctivitis and lime burn. As can be seen from table 3, the various original pathologic conditions were fairly well distributed throughout the different occupations.

It appears that preceding trauma or inflammation may predispose an eye to the subsequent attack of epidemic keratoconjunctivitis, but it is obvious that these conditions are not the only factors involved, since even during the epidemic period only a small proportion (average 10 per cent for any one month) of patients treated at the office for ocular trauma or inflammation developed epidemic keratoconjunctivitis.

The epidemiologic data have been presented because little or no definite information is available concerning the mode of spread of epidemic keratoconjunctivitis. It is interesting to note, however, a possible significant sequence of events in connection with certain patients in this study.

Patient 58, the first one with epidemic keratoconjunctivitis seen, appeared in January. Analysis of the visits of patient 58 revealed an overlapping with the visits of patient 64, and 64's visits overlapped with those of the patients who next developed the disease, i. e. 44, 22, 57 and 45 [3] (chart 2). It should also be noted that cases 64 and 44 were mild and occurred early in the period before the pronounced increase in incidence, whereas this increase took place shortly after the appearance of two severe cases, 57 and 22.

Another fact which may be interjected at this point is that patient 64, who formed a connecting link

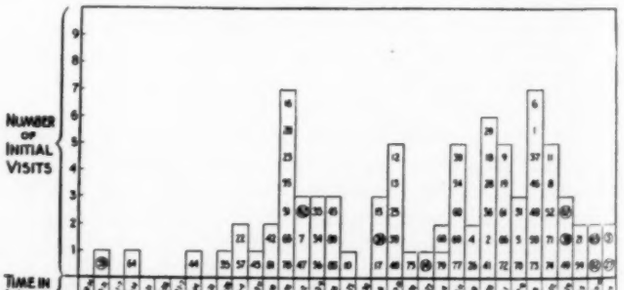

Chart 2.—Visits of patients to doctor's office. Each number represents a patient. An encircled number represents a patient who had epidemic keratoconjunctivitis when first seen by the physician. In the lower part of the graph, each dot represents one visit to the office by the patients indicated in the column on the left.

between the original one, 58, and the patients who next contracted the disease, did not develop epidemic keratoconjunctivitis until nine weeks after his appearance at the office. Did he then harbor the virus without evidence of infection and serve as a possible focus of infection for others or did he merely become

3. Patient 35 (chart 1) is not included in this sequence of those whose visits overlapped because this patient did not return to the office after the diagnosis of epidemic keratoconjunctivitis was made.

infected at a later date? For the present the answers to this and other questions must remain entirely in the field of speculation. As far as can be determined, hygienic procedures were followed at the office, so that, presumably, contaminated hands did not touch fresh patients. Therefore it is not possible to determine the exact mode of spread of the disease in the present instance.

In spite of this limited information, the present epidemiologic data may be of value in two respects:

1. It is obvious that physicians who see patients with ocular inflammation should continue to observe meticulous hygienic precautions, since they are manifestly dealing with a large number of individuals who may be susceptible to epidemic keratoconjunctivitis, although just what the individual predisposing factors are remains to be determined.

2. From an analysis of patients' visits, it is obvious that early diagnosis of epidemic keratoconjunctivitis and isolation of such patients as soon as possible is strongly indicated. This is emphasized by the fact that in the present investigation direct definite transmission of the disease occurred in 3 instances: from a husband to his wife, from a girl to her fiancé and from a son-in-law to his father-in-law.

TABLE 3.—*Occupations and Original Diagnoses of Patients in the New York Study of Epidemic Keratoconjunctivitis*

Employer	Type of Work	Number of Cases	Original Diagnoses: Foreign Body	Wound or Abrasion	Conjunctivitis	Corneal Ulcer	Epidemic Keratoconjunctivitis	Miscellaneous
Public motor transportation (9 cases)	Bus drivers	4	3	..	1	..	..	..
	Motor repairers	4	1	2	1	..	..	..
		1	..	1	..	..	..	..
Railroad workers (12 cases)	Track workers	1	1	..	..	..	..	..
	Car repairers	3	..	1	2	..	..	..
	Car cleaners	2	1	1	..	..	..	..
	Baggage car workers	2	1	1	..	..	..	..
	Ticket collectors and trainmen	4	2	..	2	..	..	..
Public utility workers (15 cases)	Mechanics	8	3	2	..	..	3	..
	Engine inspectors	1	..	..	..	1	..	..
	Meter readers	1	..	..	1	..	..	..
	Office workers	5	..	1	2	1	1	..
Dock workers (8 cases)	Crane, truck operators	4	2	1	..	..	..	1
	Loading ships and trucks	3	1	..	2	..	..	..
	Office worker	1	1	..	..	..	..	..
Steel workers (11 cases)	Grinders	3	..	..	2	..	..	1
	Assemblers	2	1	..	..	1	..	..
	Drill operators	1	..	1	..	..	..	..
	Cleaning castings	2	1	1	..	..	..	..
	Wire cutters	2	1	..	1	..	..	..
	Mechanics	1	..	..	1	..	..	..
Food industry (3 cases)	Truck drivers	1	..	..	1	..	..	..
	Food packers	2	..	1	..	..	1	..
Miscellaneous (22 cases)	Store workers, housewives and others	22	3	1	8	1	5	4
Totals		80	22 (27.5%)	14 (17.5%)	24 (30%)	4 (5%)	10 (12.5%)	6 (7.5%)

EXPERIMENTAL ASPECTS

The experimental phase of the investigation was divided into two parts. First, an attempt was made to repeat earlier work on the isolation of a virus.[1] Second, additional serologic data were gathered to clarify the relationship between epidemic keratoconjunctivitis and the virus isolated previously.

Virus isolation experiments were carried out with conjunctival scrapings from 9 patients. The scrapings were obtained during the acute phase of the disease and were put into tube-tissue cultures (serum ultrafiltrate and embryonic mouse brain), which[4] have been described elsewhere. One series of tissue cultures were kept at 37 C. for three days and one series at room temperature for nine to ten days. At the end of the periods designated, groups of 6 mice were injected with tissue culture material intracerebrally (0.03 cc.) and also intraperitoneally (0.1 cc.). If this first passage from tissue culture to mouse was negative or questionable, i. e. if mice did not develop definite symptoms following inoculation, no further attempts were made toward the isolation of a causative agent. In other words, the present experiment was a test of how practical the tissue culture technic is for a simple isolation of virus. It should be noted that routine bacteriologic studies of scrapings gave entirely negative results in 2 of the 9 cases and that in the remaining 7 cases there was noted Staphylococcus albus, diphtheroids or gram positive bacilli (1 case). Also routine bacteriologic examinations of secretions from eyes of patients were essentially negative.

Virus was isolated from the 2 specimens of scrapings which had contained no bacteria. In 1 of the 2 cases the 37 C. series was negative (produced no symptoms when injected into mice), whereas the tissue culture kept at room temperature evoked symptoms in 2 of 6 animals within three days. Emulsion of the brains of these mice produced symptoms when injected into other mice, and the virus was maintained without difficulty. The virus is now in its fifteenth mouse passage and in its fourteenth tissue culture generation.

In the second case, both the 37 C. and room temperature cultures gave positive results, the former bringing down 4 of 6 mice in two to six days, and the latter producing symptoms in 3 of 6 mice within a similar period of time. In this instance also the virus was maintained without difficulty. It is now in its thirteenth mouse passage and in its seventh tissue culture generation.

In both instances in which "virus" was obtained, all bacteriologic tests of brain emulsions and of tissue cultures were negative. The virus showed the same filtration activity (i. e. passed through membranes in

4. Simms, H. S., and Sanders, Murray: Use of Serum Ultrafiltrate in Tissue Cultures for Studying Deposition of Fat and for Propagation of Viruses, Arch. Path. **33**: 619 (May) 1942.

the same range of average pore diameter) as the virus isolated previously in New York City from patients not connected with this group. The virus was also neutralized by serums from convalescent patients studied in both this and a previous investigation. These data strongly suggest the identity of the virus isolated in the present study with that observed originally.[1]

The remaining attempts at isolation either were negative or resulted in transient symptoms in mice which could be maintained for only one, two or three mouse passages. The results of this phase of the experimental work were entirely consistent with previous experiments.

It was, of course, necessary to investigate further the specific nature of the isolated agent by testing with convalescent serum. Serums were obtained from as many patients as possible. This could not always be done, however, and specimens were taken from only a relatively small number of patients, i. e. 19 individuals.

TABLE 4.—*Development of Specific Antibodies in Patients with Epidemic Keratoconjunctivitis; Serum Specimen A Taken as Soon as Possible After Onset, and Specimen B Taken Seventeen to Thirty-Four Days after Specimen A*

Patient	Number of Days After Onset of Disease	Serum-Virus Titer * (Mouse Test)	Number of Neutralizing Doses
Experiment 1			
Control (normal human serum)	.....	10^{-0}	0
No. 79	A. 41 days †	10^{-4}	100
	B. 59 days	10^{-2}	10,000
Experiment 2			
Control (normal human serum)	.....	10^{-3}	0
No. 66	A. 20 days	10^{-4}	10
	B. 48 days	10^{-2}	1,000
No. 60	A. 21 days	10^{-4}	10
	B. 55 days	10^{-2}	1,000
No. 82	A. 9 days	10^{-4}	10
	B. 26 days	10^{-2}	1,000
No. 67	A. 3 days	10^{-4+}	?
	B. 34 days	10^{-2}	1,000
No. 68	A. 43 days	10^{-4}	10
	B. 74 days	10^{-1}	10,000

* In all cases mortality rather than morbidity was used to determine the mouse titer. The highest dilution of virus which produced symptoms and death in the mice into which it was injected was considered the end point of virus activity.

† Patient 79 had bilateral involvement, the second eye becoming involved twenty days after the onset of the disease in the first eye.

Technic: Constant amounts of undiluted serum were mixed with equal amounts of serially diluted virus; the mixtures were held for one hour at 37 C. and for four hours in the ice box and then injected intraperitoneally (0.1 cc.) into unweaned mice.

In 8 of the 19 cases studied we were able to obtain 2 serum specimens, 1 taken as soon as possible after the onset of the disease and the other taken seventeen to thirty-four days after the first. So far, 6 of these serums have been tested. In these 6 cases the development of specific antibodies has been clearly demonstrated. In 1 instance the first specimen when mixed with virus gave a titer approximating that of the control serum-virus mixture, but in the other cases an appreciable interval had elapsed between the onset of the disease and the time at which the first specimen was obtained, and neutralization varying from 10 to 100 neutralizing doses was therefore observed. The later specimens gave neutralization of from 1,000 to 10,000 doses, showing that a distinct increase in antibodies had occurred. These results are summarized in table 4. It will be noted that some of the patients seemed to respond much more rapidly than other patients, as measured by the number of neutralizing doses which could be demonstrated, but great care must be taken in interpreting the antibody responses, since the present group of patients is small and it is not possible to evaluate the effect of such individual variables as severity or duration of disease. The most important fact is that the first specimens contained one level of neutralizing antibodies, and later serum specimens showed an increase.

In the remaining 11 cases, in which only 1 serum specimen could be obtained, the specimen was taken about one month after the onset of the disease and after the acute phase had passed. The serums showed neutralization varying from 100 to 10,000 mouse doses.

The technic in these experiments was similar to that described in a previous report; i. e., constant amounts of undiluted serum were mixed with equal amounts of serially diluted virus to give the final dilutions desired; these mixtures were kept one hour at 37 C. and were then injected intraperitoneally (0.1 cc.) into unweaned mice. In all cases mortality rather than morbidity was used to determine the mouse titer. The highest dilution which produced symptoms and death in the mice into which it was injected was considered the end point of virus activity.

The virus used was that isolated from E. L. (not included in this group of patients) in April 1942.

SUMMARY

1. Clinical, experimental and epidemiologic data have been obtained in 80 cases of epidemic keratoconjunctivitis.

2. The following features were found to be diagnostically significant in all cases in this study: hyperemia and swelling of the palpebral conjunctiva, congested and hyperemic bulbar conjunctiva, edema of the lids and occasional pseudomembranes on the conjunctiva of the lower lid. In addition, lymph node involvement and the absence of discharge were found to predominate.

3. Forty-two patients had corneal involvement. There has been no absorption of corneal opacities after a period of five months.

4. Of the 42 cases of corneal involvement 14 (33⅓ per cent) showed impairment of vision varying from 5 to 15 per cent.

5. The relationship between the ocular disease and systemic symptoms was investigated: 49 patients (61.2 per cent) complained of headaches, 9 patients having severe headaches; 26 patients (32.5 per cent) complained of malaise.

6. In 3 cases severe systemic reactions occurred in the presence of a mild ocular disease. All patients with severe ocular involvement had systemic symptoms.

7. Fifty-seven patients (71.2 per cent) lost from one to eight weeks from work because of epidemic keratoconjunctivitis.

8. Epidemiologic data showed that there appeared to be individual predisposing factors present, but the nature of these factors is not fully understood. Of the 80 cases presented, 70 presented epidemic keratoconjunctivitis subsequent to ocular trauma or inflammation.

9. In two of nine attempts, direct implantation of cultures with conjunctival scrapings yielded a filtrable virus which proved to be apparently identical with that isolated previously.

10. The virus which was isolated on these two occasions produced definite symptoms in mice. It was neutralized by convalescent serum from a patient who had suffered from epidemic keratoconjunctivitis and who was not associated with the present group of patients.

11. Nineteen convalescent serums from patients in this group were tested. Neutralizing antibodies against the virus varied from 100 to 10,000 mouse doses. The virus used in the neutralization experiments was that isolated in an independent study of epidemic keratoconjunctivitis in New York City.

12. In 6 of the 19 cases, antibody development was demonstrated. Specimens of serum taken as soon as possible after the onset of the disease were compared with specimens taken seventeen to thirty-four days after the first specimen was obtained. In all cases there was a distinct increase in the titers of the second samples, indicating a specific relationship between the virus and epidemic keratoconjunctivitis.

RECOMMENDATIONS

Because epidemic keratoconjunctivitis is a disease apparently new to continental United States, and because little definite information is available concerning its mode of spread, precautions should be taken to keep it under control. On the basis of the data which have been presented, the following recommendations are made:

1. Physicians should become familiar with the clinical picture of epidemic keratoconjunctivitis, so that an early diagnosis can be made.

2. Meticulous cleanliness and disinfection of the hands of physicians and nurses who have come into contact with a case of epidemic keratoconjunctivitis is indicated.

3. All instruments should be thoroughly sterilized, and individual droppers and glass rods should be used for each patient.

4. All solutions which can be so treated should be periodically boiled.

5. Strict isolation of patients with the disease should be effected as soon as possible.

6. All contacts of the patients should be observed for early signs of the disease.

Rabies in the United States.—Rabies has a somewhat characteristic distribution throughout the United States. Human cases during the past ten years have averaged 57 annually. Two states, namely Texas and Tennessee, have averaged 5.1 to 6 cases yearly for ten years; twelve states have averaged 2.1 to 5 cases annually, whereas sixteen states have been entirely free and four states have had but 1 case during the past ten years. The number of cases in animals is not so readily determined but in general follows the same distribution. Thus, Texas and California have reported an average of more than 1,000 proved cases annually during the past five years, and Tennessee, Georgia, Alabama, Ohio, Indiana, Michigan and Illinois at least 400 to 800. On the other hand, ten states have reported an average of only 1 or less annually.—Webster, Leslie T.: Rabies, New York, Macmillan Company, 1942.

Clinical Notes, Suggestions and New Instruments

TREATMENT OF SEVERE DIABETIC COMA WITH 1,820 UNITS OF INSULIN

CHARLES CABELL BAILEY, M.D., BOSTON

My purpose in this report is to emphasize the need of large doses of insulin in cases of severe diabetic coma. This patient received 1,820 units in seven hours, which is the second largest dose used in a series of 536 consecutive diabetic comas treated in the Joslin service in the New England Deaconess Hospital since May 1923. The greatest quantity, 2,272 units in the twenty-four hours before recovery, was given to a man who had a diabetic coma during a phase of insulin resistance. Joslin, Root, White and Marble[1] in treating 536 diabetic comas employed an average dose of about 200 units of insulin in the first two or three hours of treatment. The patient to be described received 1,450 units during his first three hours in the hospital.

Recovery from Diabetic Coma with 1,820 Units of Insulin Despite a Blood Sugar of 1,232 Mg. and a Carbon Dioxide Combining Power of 7 Volumes per Cent

	Time	Crystalline Insulin Units	Blood Sugar, Mg.	Carbon Dioxide Combining Power, Vol. %	Blood Pressure
Sept. 10, 1942 Admitted	8:30 p.m.	50	1,232	7	76/40
	8:50 p.m.	100 intravenously 100 subcutaneously	.....	..	40/?
	9:07 p.m.	100 intravenously 100 subcutaneously			
	9:20 p.m.	100 intravenously 100 subcutaneously	.....	..	60/?
	9:50 p.m.	...	1,112	7	
	10:00 p.m.	100 intravenously 100 subcutaneously	.....	..	78/50
	11:00 p.m.	200 intravenously 200 subcutaneously	976	6	76/50
	11:25 p.m.	100 intravenously 100 subcutaneously			
Sept. 11, 1942	12:30 a.m.	100	908	6.8	80/50
	2:00 a.m.	200	...	..	76/40
	4:00 a.m.	...	588	13	104/60
	7:30 a.m.	...	218	21	
	9:15 a.m.	...	121		
	11:00 a.m.	...	71	36	
	1:00 p.m.	...	...	..	134/60

REPORT OF CASE

A man aged 23 with onset of diabetes in 1930 at the age of 11 years was admitted to the New England Deaconess Hospital at 8:30 p. m. Sept. 10, 1942 completely unconscious in diabetic coma.

Congenital nystagmus and slight congenital pes cavus were present. His first attack of diabetic coma occurred in 1935, five years after the onset of his diabetes, and he recovered with 270 units of insulin. His second diabetic coma occurred in 1936, and this time he was given 350 units of insulin. Also in 1936 a diabetic cataract was removed from his right eye. His third attack of diabetic coma was in 1939 when he had a gangrenous appendix. An operation was performed during the coma and he recovered with only 145 units of insulin. A right nephrectomy was done in July 1940 because of a large right functionless pyonephrotic kidney.

From the George F. Baker Clinic, New England Deaconess Hospital, Elliott P. Joslin, M.D., medical director.

1. Joslin, E. P.; Root, H. F.; White, Priscilla, and Marble, Alexander: Diabetic Coma, J. A. M. A. **119:** 1160 (Aug. 8) 1942.

The present, or fourth, attack of diabetic coma apparently was brought on by disregard of his diet. For three days before admission he was troubled with polydipsia and polyuria, but his appetite remained good. He reported for work on the night shift at 11 p. m. on September 9, at which time he first noticed anorexia and extreme polydipsia. During the night he felt "groggy," and nausea began at 5 a. m. on September 10, the day of admission. He vomited first at 5:30 and felt quite ill. Deep breathing or air hunger developed on his way home from work at 8 o'clock. At 8:30 he tried to take his usual injection of 40 units of crystalline and 40 units of protamine zinc insulin, but he felt so "groggy and sick" that he bent his needle and failed in the attempt. He then lay down on his bed and was found unconscious by his mother at 6:30 p. m., ten hours later. His local physician, Dr. Joseph A. Dunn, saw him at 7 o'clock, diagnosed diabetic coma, recognized the seriousness of his condition and gave him 70 units of regular insulin. He was admitted to the Deaconess Hospital at 8:30, one and a half hours later.

On admission he was completely unconscious and almost moribund with feeble gasping respirations at 28 a minute, the deep breathing and air hunger which he later recalled having noticed earlier in the day having disappeared. He appeared in a definite state of shock with a blood pressure of 76 systolic and 40 diastolic, flushed face, very dry tongue and a strong odor of acetone on his breath. The rectal temperature was 92 F. and the pulse 94. The skin was dry and cold. The bladder was distended almost to the umbilicus. The liver was palpable 2 cm. below the costal margin. The lungs were clear and the heart was normal in size. The eyeballs were so soft that the tension could not be measured by an ophthalmologist even twelve hours after entrance. Lipemia retinalis was looked for but not found.

Tests for blood sugar and the carbon dioxide combining power of the blood were taken; the patient was covered with several blankets, and four warm water bottles were placed near him one blanket thickness from the body. The urine on admission had already given a red Benedict test and 4 plus diacetic acid, and in consequence 50 units of crystalline insulin had been immediately injected.

A preliminary blood sugar report at 8:50 p. m., twenty minutes after entrance, showed that the blood sugar was above 1,000 mg. per hundred cubic centimeters, whereupon 100 units of crystalline insulin was given intravenously and another 100 units subcutaneously. By this time the final report was ready and showed that the blood sugar was actually 1,232 mg. and that the carbon dioxide combining power was 7 volumes per cent.

Huge doses of crystalline insulin appeared indicated, and therefore within the first four hours he received 1,550 units, 600 of which was given intravenously, the latter because of his poor circulation and obviously poor chance for its quick absorption. By the end of five and a half hours of hospital treatment he had received 1,750 units of insulin, to which should be added the 70 units given by his local physician one and a half hours before admission, making a grand total of 1,820 units of insulin in seven hours. No more insulin was administered for the next seventeen hours. The division of the insulin dose and blood sugar response are given in the accompanying table.

Other treatment during the first six hours of hospitalization consisted of isotonic solution of sodium chloride, 3,000 cc. intravenously and 2,000 cc. subcutaneously; four doses of caffeine with sodium benzoate, each 7½ grains (0.5 Gm.), one of which was by vein; gastric lavage with warm water and the removal of 400 cc. of dark fluid, and finally a cleansing enema.

At 10 o'clock, ninety minutes after admission, the pulse, which had previously been regular, became totally irregular, and an electrocardiogram showed auricular fibrillation. By midnight the pulse was again regular and normal. A later electrocardiogram was also normal.

As the patient's condition improved, the feeble gasping respiration changed to the typical deep labored Kussmaul type, after which the Kussmaul breathing gradually disappeared. The temperature rose steadily to normal over a period of sixteen hours. He began to respond three hours after admission by mumbling and was able to answer questions seven hours after entry, and one and a half hours later commenced taking sips of water, orange juice and ginger ale. By the next morning, September 11, ten and a half hours after entrance, the blood sugar was 218 mg. and the carbon dioxide combining power 21 volumes per cent.

The admission blood pressure of 76/40 almost disappeared shortly afterward, although it was never actually registered below 40 mm. of mercury systolic. This, however, gradually rose as his general condition improved.

The blood cholesterol of 406 mg. fell in the first ten and a half hours to 284 mg. A phenolsulfonphthalein renal test showed a 56 per cent excretion in two hours despite the fact that there was only one kidney. Twelve hours after admission the red blood cell count was 3,760,000, hemoglobin 11.9 Gm. and white blood cell count 6,800. The initial nonprotein nitrogen of 55 mg. per hundred cubic centimeters dropped to 33 mg. two days later. The blood acetone (combined acetone, diacetic acid and beta-hydroxybutyric acid) was 195 mg. An examination of the urine two days after recovery showed a specific gravity of 1.014, no albuminuria, and no casts, red blood cells or white blood cells.

The remainder of his hospital stay, during which he received supplementary vitamins in addition to his diet, was uneventful, and he was discharged September 23, thirteen days after he entered, on a diet of carbohydrate 190 Gm., protein 90 Gm. and fat 90 Gm., with crystalline insulin 14 and protamine zinc insulin 52 units. His case represents the seventy-second successive recovery from diabetic coma with a carbon dioxide combining power of 20 volumes per cent or below in this clinic, although now, January 1, the total successive recoveries number seventy-five, no death having taken place since August 1940.

COMMENT

This case teaches again that diabetic coma is a deficiency state, the deficiency being insulin, and that in deep coma of prolonged duration massive doses of insulin are of prime importance. Other supplementary measures such as artificial warmth, saline infusions, gastric lavage and enemas, while very helpful, take definitely a secondary place to adequate doses of insulin.

ACCIDENTAL AMPHETAMINE SULFATE POISONING

A. J. HERTZOG, M.D.; A. E. KARLSTROM, M.D., AND M. J. BECHTEL, M.D., MINNEAPOLIS

Amphetamine (benzedrine) sulfate in recent years has become a useful and widely used drug. Although the toxicity of this agent has been claimed to be slight, it still may be the source of accidental poisoning. A number of cases have been reported in which nonfatal toxic symptoms resulted from large doses of the drug. Ehrich, Lewy and Krumbhaar [1] refer to a man aged 67 who recovered after accidental ingestion of between 300 and 800 mg. (most likely 450 mg.; i. e. 5 to 6 mg. per kilogram). He was seen on the second morning with an elevated blood pressure and he was very excited and apprehensive. His heart action was violent. Therapy consisted of soluble pentobarbital only. Apfelberg [2] reported that a psychoneurotic man remained in coma thirty-six hours after taking 140 mg. of amphetamine sulfate. This patient recovered. Anderson and Scott [3] reported a case in which collapse, vomiting and heart block with an occasional extrasystole occurred after ingestion of only 30 mg. (0.4 mg. per kilogram). It would appear that the tolerance for the drug varies greatly. Nathan-

From St. Barnabas Hospital and the Department of Pathology of the University of Minnesota Medical School.

1. Ehrich, W. E.; Lewy, F. H., and Krumbhaar, E. B.: Experimental Studies on the Toxicity of Benzedrine Sulfate in Various Animals, Am. J. M. Sc. **198**: 785-803 (Dec.) 1939.

2. Apfelberg, Benjamin: A Case of Benzedrine Sulfate Poisoning, J. A. M. A. **110**: 575-576 (Feb. 19) 1938.

3. Anderson, E. W., and Scott, W. C. M.: Cardiovascular Effects of Benzedrine, Lancet **2**: 1461-1462 (Dec. 19) 1936.

son[4] observed that older persons seemed to tolerate more of the drug than young people.

The only fatal case that we are able to find reported in the literature is that of Smith[5] in 1939. This was a 25 year old college student who suddenly collapsed and died during an examination. He had been in the habit of taking 5 mg. of amphetamine sulfate thirty minutes before each examination. It was considered probable that he had taken 30 mg. of the drug during the few days prior to his death. At autopsy no adequate anatomic explanation was found to account for his death other than dilatation of the right auricle of the heart and gastric and splanchnic dilatation. A sample of the gastric contents was reported to contain 0.25 mg. of the drug. Some have questioned whether death in this instance was actually due to the small quantity of amphetamine sulfate that the victim had taken. The fact that he had been in the habit of using the drug would exclude an idiosyncrasy.

REPORT OF CASE

A girl aged 12 months had always enjoyed good health. On the morning of Aug. 30, 1942 she was playing on the floor of the bedroom of her home with her 2 year old sister. The older child apparently climbed on a chair while alone and took from the medicine chest a box of amphetamine sulfate tablets and a bottle of ferrous sulfate tablets. It is believed that the sister then gave the younger child the tablets. Shortly before 8:30 a. m. the younger child was found on the floor in a state of collapse. She was very pale. There were 12 amphetamine sulfate tablets and a bottle of ferrous sulfate tablets scattered on the floor. The prescription for the amphetamine sulfate was easily identified. Thirty tablets of 10 mg. each had been prescribed for an older relative as a nerve tonic. It was believed that 16 tablets had remained in the box before the accident and 12 tablets were found on the floor. Hence it was thought that the child took a minimum of 4 tablets, or 40 mg. However, the family was not very definite as to the number of tablets she had taken and it is quite possible that more than the amount stated had been taken by the child. The child was thought also to have taken an uncounted number of ferrous sulfate tablets of 3 grains (0.2 Gm.) each. The child was brought to St. Barnabas Hospital immediately. On admittance at 9:30 she was drowsy, cyanotic and semicomatose. Shortly after admittance she vomited brownish material. Gastric lavage revealed large quantities of brown colored material. The stomach was washed with plain water until the washings became clear. At one time during this procedure the pulse became feeble and undetectable. Respirations ceased temporarily but were reestablished by artificial respiration and carbon dioxide. The pulse remained rapid and weak. Erythematous blotches appeared over the skin of the extremities. Mucus collected in her throat. At 4:15 a. m. on August 31 extreme dilatation of her pupils was noted. Respirations became more shallow and she died at 5:05 in spite of artificial respiration, approximately nineteen hours and thirty minutes after admission.

Autopsy was performed three hours and ten minutes after death. The body was 79 cm. long and weighed 25 pounds (11.3 Kg.). The pupils were widely dilated and measured 7 mm. A number of reddish blotches of the skin on the anterior surfaces of the body was noted. The peritoneal and pleural cavities appeared normal. The heart weighed 45 Gm. and showed no abnormalities. The right lung weighed 100 Gm. and the left 65 Gm. They were a mottled hemorrhagic color and showed generalized edema. The spleen weighed 30 Gm. It showed no abnormalities. A state of contraction of the organ was not demonstrated. The liver weighed 310 Gm. and grossly appeared normal. The mucosa of the esophagus was normal. The entire wall of the stomach, including the serosa, had a dark hemorrhagic color. The stomach contained approximately 300 cc. of greenish gray fluid. The mucosa was intact and had a grayish black color. The gastric contents did not have a characteristic odor. The duodenum and first portion of the jejunum showed slight discoloration of the mucosa. The mucosa of the remaining small bowel, colon and rectum appeared normal. The small bowel contained fluid similar to that found in the stomach. The pancreas appeared normal. The adrenals, especially the right, showed a diffuse hemorrhagic discoloration. The kidneys weighed 40 Gm. and 38 Gm. respectively and showed nothing of note. The thymus weighed 14 Gm. The remaining examination revealed no abnormalities. The lumbar spinal cord appeared normal. The bone marrow of the sternum was red. Normal postmortem blood clots were present. Examination of the brain was not permitted.

The only significant findings microscopically were in the lungs, stomach and adrenals. Many of the alveoli of the lungs contained coagulated serum and red blood cells. The mucosa of the stomach was intact. The remaining gastric wall showed a recent diffuse hemorrhage with many red blood cells present. A potassium ferricyanide stain showed a large amount of iron pigment deposited in the mucosa of the stomach. Both adrenals showed a recent hemorrhage located for the most part in the region of the medulla. A postmortem blood count showed 68 per cent lymphocytes, 29 per cent polymorphonuclear neutrophils, 2 per cent eosinophils and 1 per cent monocytes. An imprint of the bone marrow from the sternum showed a normal appearing marrow with active hemopoiesis. Megalokaryocytes were present. The anatomic diagnosis was recent hemorrhage in the gastric wall and adrenals and edema of the lungs. Death was attributed to amphetamine sulfate poisoning.

COMMENT

The sudden collapse followed by coma and death of a healthy 1 year old child following the accidental ingestion of amphetamine sulfate and ferrous sulfate, together with the autopsy findings, established poisoning as the cause of death. Ferrous sulfate can be eliminated as the cause, since this iron preparation is relatively nontoxic. Amphetamine sulfate is a powerful sympathetic stimulant closely related chemically and physiologically to epinephrine. Unlike epinephrine, amphetamine sulfate is destroyed very slowly by the body and its effects are more lasting. Ehrich, Lewy and Krumbhaar[1] found no specific anatomic changes in animals dying of lethal doses of amphetamine sulfate. In a wide variety of animals they reported dilatation of the heart, congestion of the liver and kidneys, either congestion or contraction of the spleen, the presence of air in the stomach and intestines, and, in some animals, subpleural and pericardial hemorrhages as well as well defined and sharply demarcated areas of constriction of the small intestine. A few of the animals showed necrosis of the liver and spleen. In monkeys, the findings in the central nervous system were venous stasis, and perivenous hemorrhages in the meninges and white matter of the hemispheres and cerebellum. Toxic degeneration of some of the nerve cells in these regions were also noted. The authors found the minimum lethal dose of the drug to vary considerably with the age and species of the animal. Young monkeys were the most susceptible, in which 5 mg. per kilogram was a lethal dose while an adult monkey required from 20 to 25 mg. per kilogram. It appears that our patient had received 3.5 mg. per kilogram of body weight. The family could not be very definite as to the exact number of tablets taken, however, and it is possible that she received considerably more than this amount. The hemorrhage in the regions of the medulla of the adrenals found at autopsy suggests a possible relation with the sympathicotropic action of the drug. At present there is no specific antidote for amphetamine sulfate poisoning.

SUMMARY

Sudden collapse with coma and death occurred in a 1 year old child following the accidental taking of ferrous sulfate and amphetamine sulfate. Death is considered to have been the result of amphetamine sulfate poisoning.

4. Nathanson, M. H.: The Central Action of Beta-Aminopropylbenzene (Benzedrine), J. A. M. A. **108:** 528-531 (Feb. 13) 1937.

5. Smith, Lowell C.: Collapse with Death Following the Use of Amphetamine Sulfate, J. A. M. A. **113:** 1022-1023 (Sept. 9) 1939.

Council on Foods and Nutrition

THE COUNCIL ON FOODS AND NUTRITION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. FRANKLIN C. BING, Secretary.

VEGETABLE JUICE COCKTAILS

The commercial production of canned tomato juice is a relatively new and now important industry. At one time little attention was given to the vitamin C content of the finished product. Then, largely as a result of investigations conducted under the auspices of the National Canners Association, it was learned that considerable destruction of vitamin C may occur unless precautions are taken to eliminate air in the processing. This can be done by conducting the canning operations in an atmosphere of steam. Other improvements in technological procedure were developed and today commercially canned tomato juice can be expected confidently to provide the full vitamin C content of the freshly expressed juice. Losses in the can likewise appear to be small, although this factor needs further study. There is evidence that the vitamin C is retained better in tinned containers than in glass.

Vitamin C in Mixed Vegetable Juices and in Ordinary Canned Tomato Juice

Specimen No.	Name of Product	Ascorbic Acid Mg. per 100 Cc.	p_H
	Mixed Vegetable Juices		
1 and 2	Rolle's Vegetable Juice Cocktail	6.3	4.2
		9.8	4.1
3 and 4	Oelerich's Big 9 Vegetable Cocktail Juice	3.9	4.1
		4.7	4.1
5	Cellu Mixed Vegetable Juices	7.6	4.4
6	V-8 Cocktail, 8 Vegetable Juices	8.0	4.1
7	Holleb's Blended Supreme Vegetable Juice Cocktail	9.5	4.3
8	Snider's Vegetable Juice Cocktail	13.2	4.2
9	Scott Co. Vegetable Juice Cocktail	13.0	4.1
	Average	8.3	
	Tomato Juices		
10	Roosevelt Brand Tomato Juice	16.0	4.0
11	Campbell's Tomato Juice	18.0	4.0
12	Savoy Tomato Juice	18.0	4.0
13	Libby's Tomato Juice	20.0	4.1
14	Rand Co. Brand Tomato Juice	14.0	4.0
15	Holleb's Supreme Tomato Juice	14.0	4.0
16	Security Brand Tomato Juice	21.0	4.0
17	Royal Blue Stores Brand Tomato Juice	15.0	4.0
18	Snider's Tomato Juice	16.0	4.0
19	Heinz Tomato Juice	16.0	4.0
	Average	16.8	

With the development of canned tomato juice as an important food item there has been witnessed also the more recent production of what have been called tomato juice or vegetable juice cocktails. One such preparation has been accepted by the Council for a number of years; it consists of ordinary canned tomato juice with a dash of tabasco sauce for flavoring purposes. Of late, however, there have been developed juices in which tomato juice may represent less than 60 per cent of the total volume. The question arises How does this manipulation of tomato juice affect the nutritional quality of the products?

At its meeting in March 1942 the Council discussed the available evidence on this problem and decided[1] not to approve of mixed vegetable juices of inferior nutritive value. The evidence then on hand showed clearly that these so-called vegetable juice cocktails have less vitamin C than ordinary tomato juice.

There is an additional health aspect to the vegetable juices, or suspensions of finely minced vegetable material, especially those which are made by so-called health food stores for dispensing to the public. Tomato juice, like the citrus fruit juices, is quite acid in reaction and therefore requires less heat treatment to render it safe from spoilage organisms or pathogenic bacteria than is necessary in the processing of less acid juices. Carrot juice, celery juice and the like are less acid than tomato juice and their addition to tomato juice reduces the hydrogen ion concentration. The mixed juices therefore may require quite different processing times and temperatures. The recent tracing in California of 2 cases of typhoid to contaminated carrot juice, improperly pasteurized, is an example of a hazard that all too frequently is overlooked by the amateur or inexperienced food dispenser.[2]

Correspondence with firms has indicated that sometimes little attention has been given either to the sanitary or to the nutritive aspects of these mixed vegetable juices. For that reason samples of representative products were purchased on the open market. Also samples of tomato juice were obtained for comparative purposes. These specimens were examined for their vitamin C content and hydrogen ion concentrations in the A. M. A. Chemical Laboratory by Dr. Albert E. Sidwell and Dr. George O. Sharp. The data are provided in the accompanying table. The p_H was determined by the glass electrode method. The ascorbic acid concentration was determined by titration with 2,6-dichlorophenolindophenol according to a modification of the method of Bessey and King[3] as described by Thornton.[4]

The figures show that the average ascorbic acid content is less than that of undiluted tomato juice. The p_H in general is slightly less acid, so that no special problem would be presented in the proper processing of these particular products. The values for the ascorbic acid content of canned tomato juice in this series average 16.8 mg. to each hundred cubic centimeters. In some earlier tests performed for the Council[5] by Dr. E. M. Bailey of the Connecticut Agricultural Experiment Station the average ascorbic acid content of seventeen brands of tomato juice was 18.0 mg. to each hundred cubic centimeters. Although some of the better mixed juices approach the vitamin C content of the poorer samples of tomato juice, the average of the samples examined and reported herein is about half the value of tomato juice.

No determinations were made of the carotene content of these products. It would appear, from the nature of the manufacturing processes, that the vitamin A value of the mixed juices likewise is less than that of undiluted tomato juice.

The advertising of the mixed vegetable juices is apt to be misleading, because of the impression that the products contain the food values of each ingredient. The uninformed reader no doubt gains the erroneous impression that all the nourishment of celery, parsley, carrots, spinach, lettuce, endive, watercress and perhaps other vegetables is in a product. Instead of being superior products, the present report shows that the mixed vegetable juices are likely to be inferior in nutritive value to ordinary tomato juice.

It is of interest that the War Production Board in its original M-81 order early in 1942 restricted the production of canned mixed vegetable juices containing less than 70 per cent tomato juice, but apparently this order later was rescinded. More recently the War Production Board again has severely restricted the production of these products during 1943. A factor that may need consideration in evaluating the products from the point of view of essentiality in wartime is the question of what becomes of the solid part of the vegetable, the juice of which is used to dilute the tomato juice. Is this material with its unextracted food values discarded? What is the cost of the products as compared to the cost of better known relatively standard items? The answers to such questions no doubt will help in the complete evaluation of the significance of the various mixed vegetable juices that have been developed, but such considerations are not within the purview of the Council.

1. Annual Meeting of the Council on Foods and Nutrition, J. A. M. A. **119:** 344 (May 23) 1942.

2. Geiger, J. C.: Am. J. Pub. Health **29:** 1244 (Nov.) 1939.

3. Bessey, O. A., and King, C. G.: J. Biol. Chem. **103:** 687 (Dec.) 1933.

4. Thornton, N. C.: Contributions of Boyce Thompson Institute **9:** 273, 1938.

5. The Vitamin C Content of Commercially Canned Tomato Juice and Other Fruit Juices as Determined by Chemical Titration, J. A. M. A. **110:** 650 (Feb. 26) 1938.

In view of the foregoing facts the Council reaffirms its decision not to approve of the production of mixed vegetable juices of inferior nutritive value. The Council also voted to authorize publication of the present report with a view to providing some of the considerations which have led to the present decision.

Council on Industrial Health

MEDICAL SERVICE IN INDUSTRY

THE COUNCIL ON INDUSTRIAL HEALTH HAS APPROVED THIS ARTICLE AS THE SIXTH IN A SERIES ON MEDICAL SERVICE IN INDUSTRY.

C. M. PETERSON, M.D., Secretary.

AN INDUSTRIAL HEALTH PROGRAM FOR A COUNTY MEDICAL SOCIETY

At the request of the War Participation Committee of the American Medical Association, the Council on Industrial Health has prepared a program for improved county medical society organization to enable physicians to contribute more directly to industrial health activity in small plants. Local circumstances should modify these recommendations as needed.

ORGANIZATION OF THE COMMITTEE

Every medical society in a county having sufficient industrial concentration to justify it, should organize a committee on industrial health. There should be representation on the committee from (1) private practice, (2) industrial practice and (3) the local health department. These are the essential professional groups needed to supply an adequate health service to industry in any community.

It is desirable also that an executive officer of the county medical society should be a member of the committee.

OBJECTIVES OF THE COMMITTEE

The committee should understand the components of an adequate industrial health service and be prepared to adjust them to existing local medical and public health facilities and to patterns of community medical practice.

The essentials of an industrial health service are:

1. A competent physician who takes genuine interest in applying the principles of preventive medicine and hygiene to employed groups and who is willing to devote regular hours to such service in the working environment.

2. Industrial nurses with proper preparation, acting under the physician's immediate supervision or under standing orders developed by him or by the committee on industrial health of the county medical society.

3. Industrial hygiene service directed at improvement of working environment and control of all unhealthful exposures, to be provided by physicians and others with guidance and assistance from the specialized personnel in state and local bureaus of industrial hygiene.

4. A health program which should include:

(*a*) Prompt and dependable first aid, emergency and subsequent medical and surgical care for all industrially induced disability.

(*b*) Health conservation of employees through physical supervision and health education.

(*c*) Close correlation with family physicians and other community health agencies for early and proper management of nonoccupational sickness and injury.

(*d*) Good records of all causes of absence from work as a guide to the establishment of preventive measures.

COMMITTEE ACTIVITY

The following recommendations will be supplemented from time to time by instructions made up from reports issued by the Council on Industrial Health and from other sources. The material will reach the committees through industrial health bulletins, medical journals, direct correspondence and the Council's field activities.

1. The committee in the county society should request instruction from the committee on industrial health in the state medical association and from the state division of industrial hygiene. Preferably, a preliminary conference should be held with representatives of these two agencies to establish:

(*a*) The lines of relationship and responsibility already existing between government, industry, labor and the medical profession.

(*b*) The principal industrial health problems of the community as a basis for remedial action.

(*c*) The proper organization and employment of local medical and health facilities.

(*d*) Supplementary services which can be called on from sources outside the community itself.

The needs of small industry should be particularly stressed.

2. The names of all physicians now serving or willing to serve in industry should be determined. These physicians should be invited to attend a meeting at which the results of the preliminary conference just described can be reported and general details of the program presented for discussion and adoption.

3. Conferences should be held with other essential professional groups, particularly industrial or public health nurses and industrial hygienists, in order that dependable arrangements for services provided by these groups may be made.

4. The county medical society committee should then request a conference with the executives or a representative committee of the local manufacturers' association, chamber of commerce or both to describe the program and to determine how the medical profession and the local health department can accelerate and improve production through appropriate health activity. Specifically, the following items should be discussed:

(*a*) The essentials of industrial health service as outlined.

(*b*) The health and economic benefits of such a service.

(*c*) Methods of supplying this service.

(*d*) Probable cost.

The committee of the manufacturers' association can well be asked to act permanently as adviser to the county medical society committee.

5. Active cooperation should be secured from local labor organizations both in respect to the conduct of medical services in the plant and to establish a program of health education in the community. Health education should emphasize particularly nonoccupational factors which are of importance to the health of workers—nutrition, housing, proper use of leisure time, recreation and other related activities. The committee representative of local labor organizations should be requested to assume a considerable share of responsibility for the health educational aspects of the program and should regularly act in an advisory capacity to the committee on industrial health of the medical society.

6. The next procedure should be an open meeting conducted jointly by the county medical society and the local manufacturers' organization or chamber of commerce, to which employers, physicians, other professional agencies, representatives of labor and, in fact, the community at large, can be invited. This meeting will provide means for promoting the program widely throughout local industry.

7. Following preliminary organization, the activities of the county medical society's committee on industrial health will fall mainly under four major headings:

(*a*) Investigation of local causes of lost time in industry as a basis for necessary remedial service.

(*b*) Coordination of community industrial health facilities.

(*c*) Frequent education of the public about the benefits of an industrial health program.

(*d*) Continuous education of the medical profession as a means for elevating standards of industrial health service.

In all other ways the committee should exercise that degree of initiative and leadership which will properly represent medicine's responsibilities and opportunities in this important field.

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SATURDAY, JANUARY 23, 1943

CONTINUOUS CAUDAL ANALGESIA IN OBSTETRICS—A METHOD FOR SAFE, PAINLESS CHILDBIRTH

Elsewhere in this issue appear two papers by Hingson and Edwards [1] and by Gready and Hesseltine [2] dealing with a method called continuous caudal analgesia, used in obstetrics for the relief of pain during childbirth. The method, which is a natural outgrowth of the development of local, spinal and caudal anesthesia, was first used in obstetrics in the U. S. Public Health Service Marine Hospital at Stapleton on Staten Island, New York, on Jan. 6, 1942. Since that time the method has been tried in some nineteen clinics associated with medical schools and well established hospitals. Altogether some 589 women have been delivered of babies by this method without maternal mortality and with but 3 instances in which infants died—these without reference to the method of analgesia that was employed.

As will be observed by a careful reading of the articles, the technic is one which demands the competent art of the specially trained anesthetist or surgeon and the practice of a high order of obstetric science. It is not a method for indiscriminate use in the home or by those who have not been especially trained in its technic or in a realization of conditions which might contraindicate its use. These considerations are especially emphasized in both the manuscripts which are published. Indeed, Drs. Hingson and Edwards, before undertaking their technic, dissected many cadavers to study at first hand the anatomy of the region concerned. They have continued their study toward improvement of the method by modifications of the apparatus concerned, the solutions used and the methods of use.

The relief of pain in childbirth has been one of the long sought goals of the medical profession. In developing their technic Drs. Hingson and Edwards traveled frequently to leading institutions of medical education and to lying-in hospitals in order to train men working in these fields in the technic that they themselves had elaborated. The significance of the observation is such that the Editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION considered it desirable to assemble promptly the opinions of some of those who have had opportunity to test the method under controlled conditions in hospitals. The following is a statement by Dr. Norris W. Vaux, professor of obstetrics at Jefferson Medical College and obstetrician and gynecologist-in-chief at the Philadelphia Lying-In Hospital:

> Our experience at the Philadelphia Lying-In Hospital with continuous caudal analgesia since July has been highly satisfactory. It is a 100 per cent effective analgesia and is not dangerous if properly administered using the technic outlined by Drs. Hingson and Edwards. It needs constant supervision by some one trained in the technic.
>
> There are a few contraindications to its use, chief of which is placenta previa.
>
> The labor is definitely shortened. Cervical dilatation is more rapid. Postpartum blood loss is less. Primary respiration in the infant is established promptly. Involution of the uterus is hastened. This form of analgesia does not inhibit or delay lactation. Bladder function is not disturbed. There is no lower extremity paralysis.
>
> In all surgical procedures the tissues heal rapidly. Our clinic is using this method cautiously under the supervision of an anesthetist trained in the administration of spinal anesthesia. Our time has been limited in the use of this method, but our results so far show that it is the best method yet devised for the relief of pain in labor.

Another obstetrician who had opportunity to test the method for a considerable period is Dr. Francis R. Irving, associate professor of clinical obstetrics at Syracuse (N. Y.) University College of Medicine. He states:

> Dilatation occurs rapidly soon after administration of the analgesia. We find that the needles are troublesome regardless of flexibility and utilize a catheter instead of the needle. We have delivered 85 women since October 10 without failures. There is no question that it is perfect painless childbirth without deleterious effect on mother or child.
>
> The use of this method shortens labor and relaxes the soft parts. We have had considerable experience with scopolamine, the barbiturates and paraldehyde.
>
> As a complication the physician should watch particularly the fetal heart. The knee-elbow position of the mother may cause pressure on the cord and thus affect the fetal heart. This has no bearing on the technic but is a danger which should be observed. The procedure may be accomplished with the patient lying on her side, but that is a technical difficulty which is important as far as the baby is concerned. If the obstetrician will realize that the position of the mother may affect the fetal heart, the method would seem to be the last word in obstetric analgesia.

Dr. John S. Lundy, head of the Department of Anesthesia in the Mayo Clinic, Rochester, Minn., says:

> We have used continuous caudal analgesia about fifty times and I think it is fine. It has also been used successfully in Brook General Hospital, Fort Sam Houston, Texas; Walter Reed Hospital, Washington, D. C., and many other places.

The time since the introduction of this method has been exceedingly brief. Nevertheless the experience accumulated seems to be sufficient to warrant the belief

1. Hingson, Robert A., and Edwards, Waldo B.: Continuous Caudal Analgesia in Obstetrics, this issue, p. 225.
2. Gready, Thomas G., Jr., and Hesseltine, H. Close: Continuous Caudal Anesthesia in Obstetrics, this issue, p. 229.

that it constitutes a real advance in securing relief of pain for mothers during childbirth. As with all other advances made in modern medical science, those who are especially trained in the method and who learn to avoid its use in cases in which the contraindications are clear are likely to be most successful in its employment. As is emphasized by all who have discussed the subject in this issue of THE JOURNAL, including Drs. Hingson and Edwards, Gready and Hesseltine, Vaux, Irving and Lundy, the method should be used only in hospitals in which there are available the services of persons trained in the administration of the analgesia and obstetricians competent to conduct a delivery with the scientific considerations and finesse associated with the special practice of the obstetric art.

With continued use of this method, still further improvements will no doubt result. Drs. Hingson and Edwards are physicians commissioned in the United States Public Health Service. On them largely will fall the burden of educating other physicians in the principles of the technic and in the conditions which should govern its use. Already they have given frequently of themselves, of their time and of their efforts in traveling to more than nineteen medical schools and hospitals, in which they have stayed for periods sufficiently long to instruct men already well trained in anesthesia and in obstetrics. From all these areas come reports such as those here cited which are more than encouraging as to the objective that has been attained. The extension of this advance in medical and obstetric science to physicians and to prospective mothers places another burden on those agencies in the United States which are cooperating in extending graduate education to the medical profession.

CONTROL OF AIR BORNE INFECTION

Working at Harvard University, William F. and Mildred W. Wells [1] invented an apparatus and developed a technic which made it possible to explore the air for micro-organisms in controlled atmospheres. Liquid suspensions of micro-organisms could be atomized into a tank and their presence demonstrated quantitatively by the air centrifuge. These researches established that transmission of infection through the air may take one of two forms, depending on the size of the infected droplet. The more obvious form recognized by Flügge is droplet infection proper. It applies to droplets larger than 0.1 mm. in diameter, which are rapidly removed from the air by gravity before they can dry and within a short distance from the source. The second form may be called air borne infection and deals with the dried residue of infected droplets or droplet nuclei, derived directly from droplets less than 0.1 mm., depending primarily on air for the buoyancy that keeps them suspended for longer times and carries them longer distances. The Wellses [2] also investigated the bactericidal effect of ultraviolet radiation on micro-organisms suspended in air and proved it to be of a higher order of magnitude than humidity, ozone or commercial germicides.

With Wilder the Wellses [3] carried out a four years study in the Germantown Friends' School and a one year study in the Swarthmore public schools. They were able to report that, as the result of ultraviolet irradiation there has been no epidemic spread of contagion among the highly susceptible groups of children of primary schools, although epidemic spread has occurred among less susceptible groups of older children in the departments of schools whose atmospheres were not irradiated. The experiment supports the hypothesis that epidemic contagion is spread through the medium of confined atmospheres and that it can be prevented by radiant disinfection of air. Deryl Hart and his co-workers established that air is an important source of contamination in every operative wound and that sterilization of the air in the operating room can be accomplished by bactericidal irradiation.[4] Del Mundo and McKhann [5] reported that the hospital infection rate during the winter of 1939-1940 in a control ward of the Infants' Hospital of Boston was 12.5 per cent, but in a ward in which the conditions were entirely comparable except that each cubicle was protected across the front and across the top by ultraviolet radiation the cross infection rate was 2.7 per cent. Sommer and Stokes [6] found that ultraviolet radiation was effective in reducing the number of air borne organisms in a hospital ward.

Recently Henle and his associates [7] prevented air borne infection in white mice exposed in a large hospital ward subdivided into sixteen separate cubicles by using ultraviolet radiation or sprays of propylene glycol. Groups of animals were placed in some of the locations, while cultures of the hemolytic streptococcus of Lancefield's group C or of the virus of influenza A were atomized in one of the cubicles. Both organisms spread rapidly throughout the air of the ward. Ultraviolet radiation and propylene glycol vapor were com-

1. Wells, W. F., and Wells, Mildred W.: Air Borne Infection, J. A. M. A. **107:** 1698 (Nov. 21) 1936.

2. Wells, W. F., and Wells, Mildred W.: Air Borne Infection, J. A. M. A. **107:** 1805 (Nov. 28) 1936.

3. Wells, W. F.; Wells, Mildred W., and Wilder, T. S.: The Environmental Control of Epidemic Contagion: I. An Epidemiologic Study of Radiant Disinfection of Air in Day Schools, Am. J. Hyg. **35:** 97 (Jan.) 1942.

4. Sterilization of Air in the Operating Room, editorial, J. A. M. A. **112:** 1072 (March 18) 1939.

5. Del Mundo, Fé, and McKhann, C. F.: Effect of Ultraviolet Irradiation of Air on Incidence of Infections in an Infants' Hospital, Am. J. Dis. Child. **61:** 213 (Feb.) 1941.

6. Sommer, H. E., and Stokes, Joseph, Jr.: Studies on Air Borne Infection in a Hospital Ward: I. The Effect of Ultraviolet Light on Cross Infection in an Infants' Ward, J. Pediat. **21:** 569 (Nov.) 1942.

7. Henle, Werner; Sommer, H. E., and Stokes, Joseph, Jr.: Studies on Air Borne Infection in a Hospital Ward: II. Effects of Ultraviolet Irradiation and Propylene Glycol Vaporization on the Prevention of Experimental Air Borne Infection of Mice by Droplet Nuclei, J. Pediat. **21:** 577 (Nov.) 1942.

pared in their effectiveness as disinfectants of the air. With heavy concentrations of air borne streptococci (more than 3,000 cells per cubic foot of air) most of the control mice died from streptococcic pneumonia and septicemia, while propylene glycol vapor protected them completely and ultraviolet radiation failed to prevent death only in the cubicle containing the atomizer. With low concentrations of the streptococcus (200 to 500 organisms per cubic foot of air) all mice survived and cultures taken from the lungs on the eighth or tenth day failed to reveal the streptococcus. However, it could be shown in other experiments that a carrier state had been induced in the animals exposed under control conditions and not in those protected by ultraviolet barriers. This was demonstrated by inoculation of the virus of influenza A eight to ten days after exposure to the air borne streptococcus. All mice died from influenza, but only those belonging to the control group now showed hemolytic streptococci in cultures taken from the lungs. Ultraviolet radiation and propylene glycol vapor were similarly effective in preventing the air borne infection with the virus of influenza A. These results indicate that both ultraviolet radiation and propylene glycol vapor are effective disinfectants of the air. Their application will depend on the individual problems and the location to be disinfected.

SCIENTIFIC INFORMATION FOR MEDICAL OFFICERS

Two projects now well under way, recently developed, are additional assurance to physicians associated with the armed forces of opportunity to keep themselves abreast of advances in medical science. By cooperation of the editorial staff of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION with the Committee on Information of the Division of Medical Sciences of the National Research Council and the Divisions of Publications of the United States Army and Navy Medical Departments and the United States Public Health Service, a letter is being prepared every two weeks, which is distributed to every officer in these services. Such letters are sent by air mail or by V-letter to various camps and hospitals and are there mimeographed for distribution to the individual officers. In some instances, copy is sent directly to an individual officer. The letters consist of from four to six pages of brief abstracts of articles of significance appearing in the current medical literature.

By special arrangement also E. R. Squibb and Sons has planned to distribute to officers in the armed forces a publication called *Medical Journal Abstracts*, prepared by the library staff of this company. Copies of this periodical are sent to each station, camp, hospital or post in care of the chief medical officer or the chief surgical officer and then distributed by him to the medical officers in his group. The company offers to send *Medical Journal Abstracts* on receipt of a correct APO address also to medical officers overseas, subject, of course, to decisions of governmental authorities in charge of postal regulations.

Certainly these attempts to aid physicians in the armed forces to keep abreast of advances in medical science can result only in improvement in medical service to the men for whose health and medical care they are responsible.

Current Comment

THE OPINION OF THE SUPREME COURT

In the text of the opinion of the Supreme Court, published elsewhere in this issue (page 267), attention is called to the following paragraphs:

Paragraph 6.—"First. Much argument has been addressed to the question whether a physician's practice of his profession constitutes trade under Section 3 of the Sherman Act. In the light of what we shall say with respect to the charge laid in the indictment, we need not consider or decide this question."

Paragraph 7.—"Group Health is a membership corporation engaged in business or trade. Its corporate activity is the consummation of the cooperative effort of its members to obtain for themselves and their families medical service and hospitalization on a risk-sharing prepayment basis. The corporation collects its funds from members. With these funds physicians are employed and hospitalization procured on behalf of members and their dependents. The fact that it is cooperative, and procures service and facilities on behalf of its members only, does not remove its activities from the sphere of business."

Paragraph 28.—"We need add but a word as to the sufficiency of the proof to sustain the charge. The petitioners in effect challenge the sufficiency, in law, of the indictment. They hardly suggest that if the pleading charges an offense there was no substantial evidence of the commission of the offense. But, however the argument is viewed, we agree with the courts below that the case was one for submission to a jury. No purpose would be served by detailed discussion of the proofs."

Paragraph 29.—"Third. We hold that the dispute between petitioners and their members, and Group Health and its members, was not one concerning terms and conditions of employment within the Clayton and the Norris-La Guardia Acts."

Paragraph 37.—"In truth, the petitioners represented physicians who desired that they and all others should practice independently on a fee for service basis where whatever arrangement for payment each had was a matter that lay between him and his patient in each individual case of service or treatment. The petitioners were not an association of employees in any proper sense of the term. They were an association of individual practitioners each exercising his calling as an independent unit. These independent physicians, and the two petitioning associations which represent them, were interested solely in preventing the operation of a business conducted in corporate form by Group Health."

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Mobilization of manpower necessitates many unusual readjustments. The mobilization of the medical profession for service to the armed forces and to civilians and the maintenance of production of physicians have been fraught with many difficulties. The medical schools of the country have voluntarily reduced the period required for the curriculum of the medical school from four to three years. The required premedical college course has been reduced to two academic years. Now the War Manpower Commission and other federal agencies have formulated a coordinated program looking to the satisfactory training of an adequate number of physicians to meet both the military and the civilian needs. Many of the details in regard to this program have not yet been clarified. The seriousness of the many problems involved, affecting as they do the lives of thousands of young men as well as the efficient conduct of many of the colleges of arts and all of the medical schools of the country, emphasizes the importance of the Annual Congress on Medical Education and Licensure to be held at the Palmer House in Chicago on February 15 and 16. The program appears in this issue of THE JOURNAL on page 269. One of the greatest problems involved in the mobilization of the medical profession is the meeting of changing civilian and industrial needs. This calls for the relocation of many physicians and the consequent adjustment of state licensure regulations. The program, including as it does addresses by President Elliott, chief of the Professional and Technical Employment and Training Division of the War Manpower Commission, General Dalton of the U. S. Army, representatives of the Office of Procurement and Assignment and the Surgeon Generals of the U. S. Army, the U. S. Navy, and the U. S. Public Health Service, should go far toward clarifying the details of the various programs involving the whole field of medicine in the war.

MALARIAL HEMAGGLUTINATION

An interesting contribution to the pathology of malaria is contained in a study of intravascular hemagglutination in birds infected with Plasmodium cathemerium, currently reported by Lack [1] of the University of Tennessee. Using the Knisely quartz rod microilluminator, the investigator studied the histopathology of the circulation in the wing web of normal and experimentally infected canaries. A drop of liquid petrolatum placed on the epithelium facilitated visualization at a magnification of 96 diameters. All experimentally infected birds developed parasites in the blood stream with counts up to 67 per cent, from which all but one bird died. As the parasite count began to rise there was an initial loss of "streamlining" in the peripheral circulations accompanied by transient sticking of leukocytes to the endothelial lining of the venules plus evidence of plasma leakage. As the count increased the white cells became adherent to the endothelium in ever increasing numbers, accompanied by the formation of sticky clumps of red cells, which retarded the rate of blood flow in many areas. In the subsequent twenty-four to forty-eight hours came progressive intravascular clumping. The clumps were now fairly firm, could withstand intravascular stress and occasionally appeared in the arterioles. Plasma viscosity was apparently increased. The clumps were originally formed only by parasitized cells but later included both infected and normal erythrocytes. The final stage was a "pastelike" blood flow followed by death of the bird within a few hours. Intravascular agglutination had previously been described in experimental malarial monkeys by Knisely and his co-workers of the University of Chicago. The phenomenon presumably occurs in man.

1. Lack, A. R., Jr.: Science **96**: 520 (Dec. 4) 1942.

FATAL ACCIDENTS TO INFANTS IN WARTIME

According to a recent issue of the Statistical Bulletin of the Metropolitan Life Insurance Company [1] a rising birth rate such as has been experienced during the last few years is inevitably accompanied by a proportionate increase in the accidental deaths in earliest childhood, especially in view of the present haphazard attitude toward child safety. It may therefore be anticipated that for the year 1942, and probably also for 1943, the figures on the number of children under 1 year of age who die of accidental injuries will be well above the average of the last ten years. Experience has shown that, of every thousand born, 1 will die in the first year of life as the result of an accident. If this ratio persists, 2,600 children under 1 year of age will be found to have been accidentally killed in 1942. The number, moreover, may be as high as 3,000 if, as is not unlikely, there was an actual increase in the accidental death rate during the year. Among the most important factors which influence this death rate, as pointed out in the report, are early maternal absences and the attempt to keep infants warm by heavy covers—the latter a factor of special importance to parents living in homes subject to fuel oil rationing. Indeed, the greatest hazard encountered by infants is that due to smothering. The parent who covers the child with more or heavier blankets to offset the decrease in the amount of heat in the home this winter should make sure that the bed clothing is arranged so that the child cannot be suffocated. Fatalities in infants frequently occur also from foreign bodies lodged in the air passages, particularly aspirated vomitus, inhaling of food, and the swallowing of safety pins, marbles, thumb tacks and other objects. Hot water bottles left in the crib to keep it warm should be well covered and tested to see that they are not so hot as to burn the baby. Other causes of accidents are hot liquids in pots, pans and cups left within reach of babies, poisons and drugs left carelessly about, stoves or other hot objects against which the child may fall, and falls out of cribs, beds and windows and downstairs.

1. Statistical Bulletin Metropolitan Life Insurance Company **23**: 3 (Nov.) 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession.

ARMY

THE ARMY FLIGHT SURGEON

The flight surgeon today, as described by Brig. Gen. David N. W. Grant, A. U. S., air surgeon, Army Air Forces, in the *Army and Navy Journal* of January 2, is an integral part of the Army Air Forces; that is, of air research and development, of every combat unit, of every air evacuation unit and of the paratroopers. The flight surgeon plays a major role in the development and maintenance of *esprit de corps* and morale among the personnel of the army air forces. He has developed methods for selecting from the youth of America those whose aptitude for flying is greatest. He preserves and conserves manpower of the air forces at maximum efficiency, through the supervision of a carefully studied and specially constituted application of preventive medicine. He is responsible for the restoration of combat casualties to active health.

General Grant continues: The supercharged high powered motor which enables aircraft to fly at altitudes of 40,000 feet has introduced the complex problem of anoxia. Above 10,000 feet there is insufficient oxygen for normal physiologic requirements. Above 20,000-25,000 feet life cannot be maintained without the use of accessory oxygen equipment. At 40,000 feet it is impossible for the human being, even when breathing pure oxygen, to live without using pressurized breathing equipment. Thanks to the development of the oxygen mask and regulators, our air combat forces are now operating routinely and safely in the vicinity of 35,000 feet.

Motion sickness, referred to in the air forces as "air sickness," has been a serious problem. The aviation cadet who repeatedly becomes airsick must be eliminated. Air borne troops are unable to fight after parachuting to earth if they are airsick. Prevention and control of airsickness are subjects of extensive research. Selection tests are now being developed so that potentially airsick individuals will not be accepted for training. The use of special ear tests and the correlations of swing sickness with airsickness have revealed valuable facts about the inner ear which may help in the solution of this problem.

The intensity of aircraft motor noise, the loudest known to man, has been a difficult problem. Even the loudest thunder cannot be heard while flying. Noise of this magnitude produces a definite, though limited, impairment in a part of the range of auditory perception. Owing to the shape of the ear and ear canal, it has not been possible to design an ear phone which will satisfactorily exclude motor and propeller noise. The ratio of motor noise intensity to signal intensity has not yet been sufficiently reduced to permit ideal radio communication.

Air evacuation of wounded soldiers from the front lines to large surgical hospitals in the rear is one of the great advances of medical care in this war. The speed and ease of air evacuation establish a higher level of morale among troops. The flight surgeon is therefore charged with many responsibilities. He practices a highly specialized form of applied preventive medicine and assists in the development of equipment to increase the pilot's physiologic performance. He must basically be a good doctor, counselor and friend and, if the personnel under his jurisdiction become sick or wounded in combat, he sees to it that they receive adequate and prompt attention.

AVIATION MEDICAL EXAMINERS

Graduation exercises were held recently at the School of Aviation Medicine in Texas for another class of aviation medical examiners. The didactic portion of this course was conducted in Texas and the practical portion at three army air forces classification centers elsewhere. A list of graduates of this class follows:

ARKANSAS

Jack R. Ellis, 1st Lieut., Hot Springs National Park
David D. Fried, 1st Lieut., Big Fork
Robert H. Jackson, 1st Lieut., Little Rock
Elmer J. Ritchie, Capt., North Little Rock
Jett O. Scott, Capt., Hot Springs National Park
George B. Talbot, Capt., Pine Bluff

CALIFORNIA

Don J. Hunter, 1st Lieut., Bakersfield
Thomas M. Fullenlove, Capt., San Francisco
Nicholas G. Maximov, Capt., San Francisco
Thomas A. Collins, 1st Lieut., Fresno
Albert E. Fleming, 1st Lieut., Fresno
Herbert W. Jenkins, 1st Lieut., Palo Alto (Menlo Park)
George M. Plagens, 1st Lieut., San Diego
Frederick J. Northway, 1st Lieut., San Francisco

CONNECTICUT

Harold W. Duennebier, 1st Lieut., Hartford
Gershon B. Silver, Capt., Hartford
William E. Swift Jr., 1st Lieut., Hartford

DISTRICT OF COLUMBIA

George J. Fleury Jr., 1st Lieut., Washington
Harold A. Timreck, 1st Lieut., Washington
Fred J. Wertz, 1st Lieut., Washington

FLORIDA

Julius Alexander, 1st Lieut., Miami

GEORGIA

Jack K. Bleich, Capt., Atlanta
James L. Campbell Jr., Capt., Atlanta
Carroll E. McCarthy, 1st Lieut., Columbus
John P. O'Brien, Major, Albany

ILLINOIS

Edmund R. Adler, 1st Lieut., Chicago
George P. Ballard, Capt., Chicago
Arnold Black, 1st Lieut., Chicago
Theodore R. Marquardt, 1st Lieut., Lombard

INDIANA

Basil K. Bryne, 1st Lieut., New Albany
Fred O. Clark, 1st Lieut., Syracuse
Raymond D. Miller, 1st., Lieut., Martinsville
Harold T. Moore, 1st Lieut., Indianapolis
James M. Pfeifer, 1st Lieut., Lawrenceburg
Wendell C. Stover, 1st Lieut., Boonville
Bryce P. Weldy, 1st Lieut., Hartford City
Paul F. Zwerner, 1st Lieut., Terre Haute

IOWA

Lowell E. Martin, 1st Lieut., Hamburg
Harold J. Peggs, 1st Lieut., Des Moines

LOUISIANA

William M. Hall., 1st Lieut., Shreveport
Robert M. Shepard, 1st Lieut., New Orleans

MAINE

Burton S. Marsh, 1st Lieut., Greenville Junction

MASSACHUSETTS

Dante Del Campo, 1st. Lieut., Lynn
Richard H. Grogan, 1st Lieut., Watertown
Donald H. Haselhuhn, 1st Lieut., Springfield
Julius Levine, 1st Lieut., Boston
Donald K. McClusky, Captain, Worcester.
Charles G. Mixter Jr., 1st Lieut., Boston
Francis X. Sullivan, 1st Lieut., Danvers

MICHIGAN

Felix S. Alfenito, 1st Lieut., Grand Rapids
Bernard H. Fried, Capt., Detroit
Lyman E. Ihle, 1st Lieut., Detroit
Richard F. Kuhn, 1st Lieut., Detroit
Harry A. Lusk, 1st Lieut., Ann Arbor
Daniel C. Thomson, 1st Lieut., Ann Arbor

MINNESOTA

Bradley C. Brownson, Capt., Rochester
William H. Keffer, 1st Lieut., Rochester
Earl H. Koepke, 1st Lieut., St. Paul
Robert F. Rushmer, 1st Lieut., Rochester

MISSISSIPPI

Rufus K. Simpson, Capt., Meridian

MISSOURI

Howard S. Cowley, 1st Lieut., Kansas City
Edgar L. Tversky, Capt., St. Louis

NEBRASKA

Clayton E. Buhl, Major, Mullen

NEW JERSEY

John W. Hardy, 1st Lieut., Farmingdale

John E. Leach, Capt., Paterson
John F. Moran Jr., Capt., Lambertville

NEW YORK

George F. Bantleon, 1st Lieut., Rochester
George M. Cooper, 1st Lieut., Buffalo
Oren A. Ellingson, 1st Lieut., Brooklyn
Oliver T. Ghent, 1st Lieut., Warsaw
Mortimer Goldberg, 1st Lieut., Brooklyn
George R. Horning, 1st Lieut., Glen Head
Santord Katz, 1st Lieut., New York
Donald M. Kennett, 1st Lieut., Massapequa
Maurice L. Malins, Capt., New York
George C. Mueller, 1st Lieut., New York
Daniel E. Nathan, 1st Lieut., New York
Richard E. Nitschke, 1st Lieut., New York
Ira L. Schiffer, 1st Lieut., New York
Myron F. Sesit, Capt., New York
Stanley F. Unger, Capt., New York
Edwin C. Weinraub, Capt., New York

NORTH CAROLINA

Elbert C. Anderson, 1st Lieut., Wilmington

OHIO

William R. Calland, Capt., Barberton
Woodrow S. Hazel, Capt., Youngstown

OKLAHOMA

Leonidas A. S. Johnston, Capt., Holdenville
Francis C. Murphy, 1st Lieut., Oklahoma City

PENNSYLVANIA

Joseph C. Anderson, 1st Lieut., Ebensburg
Russell A. Barnhardt, Capt., Pittsburgh
Milton Harrison, Capt., Philadelphia
David O. Helms, 1st Lieut., Bethlehem
Charles H. Hiles, Capt., Edgewood
Paul J. Walter, 1st Lieut., Wernersville

SOUTH CAROLINA

Isaac E. Harris Jr., Major, Columbia

SOUTH DAKOTA

Harry R. Maytum, 1st Lieut., Alexandria

TENNESSEE

George H. McCain, Capt., Memphis
Joseph H. Sayers, 1st Lieut., Nashville

TEXAS

Thomas W. Brewer, 1st Lieut., Houston
Thomas A. Bunkley, 1st Lieut., Stamford
Frank F. Glover, 1st Lieut., Houston
Robert A. Kooken, 1st Lieut., Hamilton
Edgar P. McKinney, 1st Lieut., Nacogdoches
John R. Mast, 1st. Lieut., Wichita Falls
Hubert W. Miller, Capt., El Paso
Neill O. Simpson, Capt., Waco
Oscar W. Still, Capt., Dallas

UTAH

Roy B. Hammond, 1st Lieut., Provo
Thomas S. Sexton, Capt., Ogden

VIRGINIA

Joseph L. Mann, 1st Lieut., Hampton
William R. Watkins, 1st Lieut., South Boston

WASHINGTON

Allen E. Priest, Capt., Pullman
Clyde L. Wagner, 1st Lieut., Seattle

WISCONSIN

James L. Moffett, Capt., Montfort
Karl L. Siebecker Jr., 1st Lieut., Wauwatosa

ARMY NEUROPSYCHIATRY SCHOOL OPENED

The War Department announced on January 2 that the first class at the Army's School of Military Neuropsychiatry began on January 4 at Lawson General Hospital, Atlanta, Ga. The course will last four weeks. Only medical officers who have had a minimum of twelve months' full time training or practical experience in neurology or psychiatry will be eligible to attend. Each service command, the Office of the Surgeon General and the Army air forces will have quotas. Col. William C. Porter, Medical Corps, former chief of the neuropsychiatric division at Walter Reed Hospital, will be commandant of the school. He will have on his staff Major M. Ralph Caufman, M. C., Major Joseph Fetterman, M. C., and Capt. William H. Evarts, M. C.

FIELD TRAINING AT CARLISLE BARRACKS

Four hundred and eighty more officers of the Medical Department qualified for field duties on Dec. 30, 1942, when they graduated from the Medical Field Service School at Carlisle Barracks. They departed immediately for their respective units. All except four are experienced physicians, dentists, veterinarians or public health specialists. The officers' class, composed chiefly of first lieutenants, who were recently commissioned after completing their internship and R. O. T. C. training, were mostly Medical Corps officers. The subjects taught in this short intensive course included military art, military sanitation, logistics, field medicine and administration. The officers were from 43 states, the District of Columbia and Canada.

The number of Medical Department officers to be trained for field duty will be increased, starting this month. Three classes will be in session simultaneously, with one being graduated every two weeks.

In the class graduating on December 30 were 1 colonel, 2 lieutenant colonels, 8 majors, 133 captains and 224 first lieutenants of the Medical Corps, 1 lieutenant colonel, 1 major, 9 captains and 59 first lieutenants of the Dental Corps, and 2 majors, 3 captains and 24 first lieutenants of the Veterinary Corps, 2 captains and 5 first lieutenants of the Sanitary corps, 1 first lieutenant of the Quartermaster Corps and 1 first lieutenant and 2 second lieutenants of the Medical Administrative Corps.

ARMY PERSONAL

Lieut. Col. James W. Howard has been assigned by Brig. Gen. Roy C. Heflebower, commanding general, Medical Replacement Training Center, Camp Barkeley, Texas, to be director of the operations and training division of the training center. Colonel Howard has been at the center since February 1942 in other capacities and has been in the Regular Army since 1933.

GRADUATE CLASS OF MEDICAL INSPECTORS

Forty-six officers in a class of medical inspectors received diplomas at graduation exercises at the Medical Field Service School at Carlisle Barracks, Pa., on December 31. Following the ceremonies the men left for their new posts. The duties of medical inspectors are to supervise sanitation and other medical preventive measures in army camps and to make recommendations for the correction of insanitary conditions. The class, composed entirely of Medical Corps officers, included four majors, forty-one captains and one first lieutenant. Another medical inspectors class of about fifty officers began in January.

ARMY AIDS NORTH AFRICAN NATIVES

The War Department announced on January 1 that when the American invasion fleet first landed in northern Africa it brought along hundreds of thousands of dollars' worth of tea, sugar and cotton cloth as barter goods in lieu of currency. Since then many shiploads of commodities have arrived, their distribution under the direction of the American high command helping to solve the labor problems and food supplies necessary to troop operations. North Africa needs commodities and above all, medical supplies.

WAR MEDICINE MADE AVAILABLE TO BRITISH INSTITUTIONS

On recommendation of the Committee on Medical Research of the Office of Scientific Research and Development and with the collaboration of the American Medical Association, the Josiah Macy Jr. Foundation is making the periodical *War Medicine* available to a group of British institutions selected by the liaison representative of the British Medical Research Council in Washington, D. C.

PROMOTIONS IN MEDICAL DEPARTMENT

Major Wayland R. Swanson, Post Hospital, Kearns, Utah, promoted to lieutenant colonel.——Capt. Robert J. Tenner, Billings General Hospital, Fort Benjamin Harrison, Indiana, promoted to major, and First Lieuts. I. Joseph Aprile, Donald Ross and John B. Burrett of the Billings General Hospital promoted to captains.

FLIGHT SURGEONS' ASSISTANTS

Another routine course of instruction qualifying enlisted men as flight surgeons' assistants began on Dec. 7, 1942 at the School of Aviation Medicine in Texas. The course will continue for six weeks.

NAVY

NAVY MEDICAL OFFICER AWARDED SILVER STAR

The Navy Department announced on January 6, among decorations awarded to other navy medical personnel, the award of the Silver Star Medal to Lieut. John H. Peterson, M. C., U. S. N. R., of Springfield, Mass., for gallantry in the battle of Midway. Lieutenant Peterson's citation reads:

"For extraordinary gallantry and conspicuous intrepidity as Medical Officer of U. S. S. *Hammann* during and after action against enemy Japanese forces in the vicinity of Midway Island on June 6, 1942. Although he had been struck down and slightly injured by the shock of a torpedo explosion, Lieutenant Peterson, after abandonment of the sinking ship, persisted in manning a boat and directing the rescue of many seriously wounded men who might otherwise have drowned. For three days afterward he rendered constant medical attention to a great number of wounded and injured men aboard another destroyer en route to its base until the strenuous exertion from his efforts weakened him to a point of complete physical exhaustion. His courageous initiative and tireless devotion to duty were in keeping with the highest traditions of the United States Naval Service."

LAHEY CLINIC TRAINS SPECIALISTS FOR ARMY AND NAVY

Almost since the beginning of the war the Lahey Clinic has been training anesthetists for the Navy and at present has a small group which will return to the service within a few days. The clinic is also training naval medical officers in roentgenology and navy corps men as laboratory and x-ray technicians.

The Lahey Clinic now has assigned to it also a small group of Army men for training in medicine, and shortly another small group will be assigned to the clinic for training in physical therapy. In addition, the clinic is cooperating with the Massachusetts General Hospital in the training of thoracic surgeons.

CIVILIAN DEFENSE

BLOOD PLASMA RESERVES

The Office of Civilian Defense, Washington, D. C., issued Circular Medical Series No. 25 on December 21, which was as follows:

Plasma reserves are now available in every civilian defense region for use in the event of casualties resulting from enemy action or sabotage. The regional medical officer will keep all chiefs of Emergency Medical Service, hospitals and Red Cross disaster relief chairmen informed concerning the amount and distribution of plasma reserves available in the state, and how localities may secure additional supplies in emergencies. In cities where reserves are stored they may be obtained by hospitals through the local chief of Emergency Medical Services. If a community is without plasma or if its supplies are depleted, the local chief of Emergency Medical Service may obtain additional plasma in emergencies from the state chief of Emergency Medical Service. These instructions should not be construed to prevent the use of this plasma for life saving purposes in any disaster. If Office of Civilian Defense plasma is used in non-war related incidents, its use may be considered as a loan, and arrangements may be made later for its replacement.

The Office of Civilian Defense, Washington, D. C., reported on December 29 that civilian reserves of blood plasma large enough to meet the requirements of more than thirty disasters as great as the recent Boston night club fire have been established at strategic locations throughout the country and are being added to constantly under the joint program of the Public Health Service and the Office of Civilian Defense.

As of December 1 there were 50,742 units of prepared plasma in its emergency reserves. Several thousand units have been added during the month, and the full quota of 133,130 units is expected to be reached within a few months. A unit is the amount of plasma obtained from 500 cc. of blood and is sufficient for transfusion. The victims of the Boston fire required about 1,500 such units.

Although the reserves established under the blood plasma program of the Office of Civilian Defense are intended primarily for the protection of civilian casualties resulting from enemy action, they are available for saving lives in any disasters.

Liquid plasma reserves are maintained in more than a hundred and fifty hospitals which have received grants of federal funds for processing and storing plasma. Each of these hospitals maintains a reserve of at least 1 unit of plasma for each bed in the hospital. These will soon total at least 63,130 units.

In addition, a number of hospitals which did not require grants for equipment are setting up plasma banks which will comprise an additional reserve of about 50,000 units for local authorities in case of emergency.

Frozen plasma has been obtained through the Army and Navy from blood collected by the Red Cross in excess of immediate service requirements. It is stored by the Office of Civilian Defense in refrigeration depots in important hospitals in the area if needed. A quota of 29,500 units of frozen plasma has been obtained for this purpose. Finally, 50,000 units of dried plasma is being stored in centrally located depots. Most of the plasma reserves are concentrated in the areas where enemy air raids are deemed most probable. Deposits are also maintained in inland regions.

In Boston at the time of the night club fire there were on hand in the city almost twice as many units as were required for treatment of victims of that disaster. More than 75 per cent of those hospitalized as the result of the fire required administration of some plasma. The superintendent of the Boston City Hospital estimated that it saved the lives of at least 75 persons who were treated there.

MISCELLANEOUS

PUBLIC HEALTH UNDER HITLER

According to *Curieux Marcellin* of Nov. 6, 1942 the German authorities have requisitioned the Beaujon, Lariboisière and La Pitié hospitals in Paris, comprising 3,280 beds. Owing to the creation of temporary hospitals, Paris patients still dispose of 36,800 beds, which is little for a population estimated at 4,200,000. Since the beginning of war, no important epidemic has broken out with the exception of smallpox at the beginning of 1942, which was checked by intensive vaccination. Cases of scabies have increased from 1 to 70 per cent. Tuberculosis has doubled among 6 to 8 year old children and adolescents of 18 to 25. No general mortality figures have been published, but the annual rate of deaths at the Cochin Hospital has increased from 1,200 to 1,400. People go to hospitals only in the last extremity because food cards must be deposited and interminable formalities are required to get them back on leaving the hospital. British patients remaining in Paris are looked after at the Val de Grace and Jewish patients at the Rothschild foundation. All Paris hospitals suffer from enormous transport difficulties. There are hardly any ambulances. Patients are brought to the hospital with the help of the police first aid. For the return journey patients are grouped in the same ambulance, which makes a round trip like a motor bus.

Reggeli Ujsag, Novi Sad, of Nov. 12, 1942 states that the health statistics of Budapest children are deplorable. Of 100,000 children 55,000 are suffering from nervous complaints—that is, ten times as many as are suffering from consumption. It has been possible to reduce the number of cases of contagious disease, but the number of neurotic children has increased fourfold over the same period.

ORGANIZATION SECTION

TEXT OF THE OPINION AFFIRMING GUILT OF TWO MEDICAL SOCIETIES

DECISION WRITTEN BY JUSTICE ROBERTS

(From the Chicago Sun)

Washington, Jan. 18.—The text of Justice Owen J. Roberts' opinion in the Supreme Court's settlement of the antitrust act charges by the government against the American Medical Association and the Medical Society of the District of Columbia, both corporations, follows:

Petitioners have been indicted and convicted of conspiring to violate Section three of the Sherman Act, by restraining trade or commerce in the District of Columbia. They are respectively corporations of Illinois and of the District of Columbia. Joined with them as defendants were two unincorporated associations and 21 individuals, some of whom are officers or employees of one or other of the petitioners, the remainder being physicians practicing in the District of Columbia and members of the petitioners serving, as to some of them, on various committees of the petitioners having to do with professional ethics and with the practice of medicine by petitioners' members.

CHARGES EXPLAINED

For the moment it is enough to say that the indictment charged a conspiracy to hinder and obstruct the operations of Group Health Association, Inc., a nonprofit corporation organized by government employees to provide medical care and hospitalization on a risk-sharing prepayment basis. Group Health employed physicians on a full-time salary basis and sought hospital facilities for the treatment of members and their families. This plan was contrary to the code of ethics of the petitioners. The indictment charges that, to prevent Group Health from carrying out its objects, the defendants conspired to coerce practicing physicians, members of the petitioners, from accepting employment under Group Health, to restrain practicing physicians, members of the petitioners, from consulting with Group Health's doctors who might desire to consult with them, and to restrain hospitals in and about the city of Washington from affording facilities for the care of patients of Group Health's physicians.

The District Court sustained a demurrer to the indictment on the grounds, among others, that neither the practice of medicine nor the business of Group Health is trade as the term is used in the Sherman Act. On appeal the Court of Appeals reversed, holding that the restraint of trade prohibited by the statute may extend both to medical practice and to the operations of Group Health.

CITES RECORD OF CASE

The case then went to trial in the District Court. Certain defendants were acquitted by direction of the judge. As to the others, the case was submitted to the jury, which found the petitioners guilty and all the other defendants not guilty. From judgments of conviction the petitioners appealed to the Court of Appeals, which reiterated its ruling as to the applicability of Section 3 of the Sherman Act, considered alleged trial errors, and affirmed the judgments.

We granted certiorari limited to three questions which we thought important: 1. Whether the practice of medicine and the rendering of medical services as described in the indictment are "trade" under Section 3 of the Sherman Act. 2. Whether the indictment charged or the evidence proved "restraints of trade" under Section 3 of the Sherman Act. 3. Whether a dispute concerning terms and conditions of employment under the Clayton and Norris-La Guardia acts was involved, and, if so, whether petitioners were interested therein and therefore immune from prosecution under the Sherman Act.

First. Much argument has been addressed to the question whether a physician's practice of his profession constitutes trade under Section 3 of the Sherman Act. In the light of what we shall say with respect to the charge laid in the indictment, we need not consider or decide this question.

GROUP HEALTH A BUSINESS

Group Health is a membership corporation engaged in business or trade. Its corporate activity is the consummation of the cooperative effort of its members to obtain for themselves and their families medical service and hospitalization on a risk-sharing prepayment basis. The corporation collects its funds from members. With these funds physicians are employed and hospitalization procured on behalf of members and their dependents. The fact that it is cooperative, and procures service and facilities on behalf of its members only, does not remove its activities from the sphere of business.

If, as we hold, the indictment charges a single conspiracy to restrain and obstruct this business it charges a conspiracy in restraint of trade or commerce within the statute. As the Court of Appeals properly remarked, the calling or occupation of the individual physicians charged as defendants is immaterial if the purpose and effect of their conspiracy was such obstruction and restraint of the business of Group Health. The court said "And, of course, the fact that defendants are physicians and medical organizations is of no significance, for Section 3 prohibits 'any person' from imposing the proscribed restraints. . . . " It is urged that this was said before this court decided Apex Hosiery Co. vs. Leader, 310 U. S. 469. But nothing in that decision contradicts the proposition stated. Whether the conspiracy was aimed at restraining or destroying competition, or had as its purpose a restraint of the free availability of medical or hospital services in the market, the Apex case places it within the scope of the statute.

REFERS TO INDICTMENT

Second, This brings us to consider whether the indictment charged, or the evidence proved, such a conspiracy in restraint of trade. The allegations of the indictment are lengthy and detailed. After naming and describing the defendants and the Washington hospitals, it devotes many paragraphs to a recital of the plan adopted by Group Health and alleges that, principally for economic reasons, and because of fear of business competition, the defendants have opposed such projects.

The indictment then recites the size and importance of the petitioners, enumerates means by which they can prevent their members from serving Group Health plans, or consulting with physicians who work for Group Health and can prevent hospitals from affording facilities to Group Health's doctors.

In charging the conspiracy, the indictment described the organization and operation of Group Health and states that, from January, 1937, to the date of the indictment, the defendants, the Washington hospitals, and others cognizant of the premised facts, have combined and conspired together for the purpose of restraining trade in the District of Columbia."

In five paragraphs the pleading states the purposes of the conspiracy. The first is the purpose of restraining Group Health from doing business; the second, that of restraining members of Group Health from obtaining adequate medical care according to Group Health's plan; the third, that of restraining doctors serving Group Health in the pursuit of their calling; the fourth, that of restraining doctors not on Group Health's staff from practicing in the District of Columbia in pursuance of their calling; and the fifth, that of restraining the Washington hospitals in the business of operating their hospitals.

REFERS TO HOSPITAL INFLUENCE

After reciting certain of the proceedings and plans adopted to forward the conspiracy, the indictment alleges that the conspiracy and the intended restraints which have resulted from it, have been effectuated "in the following manner and by the following means" and alleged that the defendants have combined and conspired with the plan and purpose to hinder and obstruct Group Health Association, Inc., in procuring and retaining on its medical staff qualified doctors and to hinder and obstruct

the doctors serving on that staff from obtaining consultations with other doctors and specialists practicing in the District of Columbia. It states that, pursuant to this plan and purpose, the defendants have resorted to certain means to accomplish the end, and recounts them.

In another paragraph, the defendants are charged to have conspired with "the plan and purpose to hinder and obstruct Group Health Association, Inc., in obtaining access to hospital facilities for its members and to hinder and obstruct the doctors on the medical staff of Group Health from treating and operating on their patients in Washington hosiptals." It is alleged that, pursuant to this plan and purpose, defendants have done certain acts to deter hospitals with which they were connected and over which they exercised influence, from affording hospital facilities to Group Health's doctors.

The petitioners' contention is, in effect, that the indictment charges five separate conspiracies defined by their separate and recited purposes, namely, conspiracy to obstruct the business of Group Health, to obstruct its members from obtaining the benefit of its activities, to obstruct its doctors from serving it, to obstruct other doctors in the practice of their calling, and to restrain the business of Washington hospitals. The petitioners say that they were entitled to have the trial court rule upon the sufficiency in law of each of these charges and, as this was not done, the general verdict of guilty cannot stand.

CITES APPEALS COURT ACTION

They urge that even though some of the named purposes relate to the business of Group Health, and that business be held trade within the meaning of the statute, yet, as the practice of medicine by doctors not employed by Group Health is not trade, and the operations of Washington hospitals are not trade, the last two purposes specified cannot constitute violations of section 3 and the jury should have been so instructed. In this view they insist that the jury may have convicted them of restraining physicians unconnected with Group Health, or of restraining hospitals, and, if so, the verdict and judgment cannot stand.

If in fact the indictment charges a single conspiracy to obstruct and restrain the business of Group Health, and if the recited purposes are really only subsidiary to that main purpose or aim, or merely different steps toward the accomplishment of that single end, and if the cause was submitted to the jury on this theory, these contentions fail.

When the case first went to the Court of Appeals that tribunal construed the indictment as charging but a single conspiracy. It said:

"The charge, stated in condensed form, is that the medical societies combined and conspired to prevent the successful operation of Group Health's plan, and the steps by which this was to be effectuated were as follows: (1) To impose restraints on physicians affiliated with Group Health by threat of expulsion or actual expulsion from the societies; (2) To deny them the essential professional contacts with other physicians, and (3) To use the coercive power of the societies to deprive them of hospital facilities for their patients.

AGREES WITH LOWER COURT

In the trial the District Court conformed its rulings to this decision and submitted the case to the jury on the theory that the indictment charged but one conspiracy.

We think the courts below correctly construed the indictment. It is true that in describing the conspiracy five purposes are stated which the conspiracy was intended to further, but in a later paragraph, still in the charging part of the instrument, it is alleged that the purpose was to hinder and obstruct Group Health in various ways and by various coercive measures which are identical with the "purposes" before stated. The trial judge, after calling the jury's attention to the juxtaposition of these two formulations of the charge, added:

"These purposes, it is alleged, were to be attained by certain coercive measures against the hospitals and doctors designed to interfere with employment of doctors by Group Health and use of the hospitals by members of its medical staff and their patients."

In immediate context the judge added:

"To sustain that charge the government must prove beyond a reasonable doubt that a conspiracy did, in fact, exist to restrain trade in the district in at least one of the several ways alleged, and according to the particular purpose and plan set forth."

At another point the trial judge summarized the government's claim that the evidence in the case showed opposition by the petitioners to Group Health and its plan; that they feared competition between the plan and the organized physicians and that, to obstruct and destroy such competition, the petitioners conspired with certain officers and members and hospitals to prevent successful operation of Group Health's plan by imposing restraints upon physicians affiliated with Group Health by denying such physicians professional contact and consultation with other physicians, and by coercing the hospitals to deny facilities for the treatment of their patients.

QUOTES LOWER COURT

Again the judge charged:

"Was there a conspiracy to restrain trade in one or more of the ways alleged?" And again: "If it be true . . . that the District society, acting only to protect its organization, regulate fair dealing among its members and maintain and advance the standards of medical practice, adopted reasonable rules and measures to those ends, not calculated to restrain Group Health, there would be no guilt, though the indirect effect may have been to cause some restraint against Group Health."

We need add but a word as to the sufficiency of the proof to sustain the charge. The petitioners in effect challenge the sufficiency, in law, of the indictment. They hardly suggest that if the pleading charges an offense there was no substantial evidence of the commission of the offense. But, however the argument is viewed, we agree with the courts below that the case was one for submission to a jury. No purpose would be served by detailed discussion of the proofs.

Third. We hold that the dispute between petitioners and their members, and Group Health and its members, was not one concerning terms and conditions of employment within the Clayton and the Norris-La Guardia Acts.

Section 20 of the Clayton Act, as expanded by section 13 of the Norris-La Guardia Act, is the only legislation which can have any bearing on the case. Section 20 applies to cases between "an employer and employees, or between employers and employees, or between employees, or between persons employed and persons seeking employment, involving, or growing out of, a dispute concerning terms or conditions of employment . . .; and provides that none of the acts specified in the section shall "be considered or held to be violations of any law of the United States."

DEFINES LABOR DISPUTE

Section 13 of the Norris-La Guardia Act defines a labor dispute as including "any controversy concerning terms or conditions of employment, or concerning the association or representation of persons in negotiating, fixing, maintaining, changing, or seeking to arrange terms or conditions of employment, regardless of whether or not the disputants stand in the proximate relation of employer and employee."

It also provides that "a case shall be held to involve or to grow out of a labor dispute when the case involves persons who are engaged in the same industry, trade, craft, or occupation; or have direct or indirect interests therein; or who are employees of the same employer; or who are members of the same or an affiliated organization of employers or employees; whether such dispute is (1) between one or more employers or associations of employers and one or more employees or associations of employees; (2) between one or more employers or associations of employers and one or more employers or associations of employers; or (3) between one or more employees or associations of employees and one or more employees or associations of employees; or when the case involves any conflicting or competing interests in a 'labor dispute' (as defined in this section) of 'persons participating or interested' therein (as defined in this section)."

Citing these provisions the petitioners insist that their dispute with Group Health was as to terms and conditions of employment of the doctors employed by Group Health since the District Medical Society objected to its members, or other

doctors, taking employment under Group Health on the terms offered by that corporation.

They assert that section 20 of the Clayton Act, as expanded by section 13 of the Norris-La Guardia Act, includes all persons and associations involved in a dispute over terms and conditions of employment who are engaged in the same industry, trade, craft, or occupation, or have direct or indirect interests within. And they rely upon our decisions in New Negro Alliance vs. Sanitary Grocery Co., 303 U. S. 552, and Drivers Union vs. Lake Valley Co., 311 U. S. 91 as bringing within the coverage of the acts a third party, even though that party be a corporation not in trade, and employers and employers' associations even though they be only indirectly interested in the controversy. They insist that as the petitioners and Group Health, its members and doctors, other doctors and the hospitals, were either directly or indirectly interested in a controversy which concerned the terms of employment of doctors by Group Health, the case falls within the exemption of the statutes and they cannot be held criminally liable for a violation of the Sherman Act.

CITES PETITIONERS' PURPOSE

It seems plain enough that the Clayton and Norris-La Guardia Acts were not intended to immunize such a dispute as is presented in this case. Nevertheless, it is not our province to define the purpose of Congress apart from what it has said in its enactments, and, if the petitioners' activities fall within the classes defined by the acts, we are bound to accord petitioners, especially in a criminal case, the benefit of the legislative provisions.

We think, however, that, upon analysis, it appears that petitioners' activities are not within the exemptions granted by the statutes. Although the government asserts the contrary, we shall assume that the doctors having contracts with Group Health were employees of that corporation. The petitioners did not represent present or prospective employees. Their purpose was to prevent anyone from taking employment under Group Health. They were interested in the terms and conditions of the employment only in the sense that they desired wholly to prevent Group Health from functioning by having any employees. Their objection was to its methods of doing business. Obviously there was no dispute between Group Health and the doctors it employed or might employ in which petitioners were either directly or indirectly interested.

In truth, the petitioners represented physicians who desired that they and all others should practice independently on a fee for service basis where whatever arrangement for payment each had was a matter that lay between him and his patient in each individual case of service or treatment. The petitioners were not an association of employees in any proper sense of the term. They were an association of individual practitioners each exercising his calling as an independent unit. These independent physicians, and the two petitioning associations which represent them, were interested solely in preventing the operation of a business conducted in corporate form by Group Health.

In this aspect the case is very like Columbia River Packers Association, Inc., vs. Hinton, 315 U. S. 143. What was there decided requires a holding that the petitioners' activities were not exempted by the Clayton and the Norris-La Guardia Acts from the operation of the Sherman Act.

The judgments are affirmed.

Mr. Justice Murphy and Mr. Justice Jackson took no part in the consideration of the decision of this case.

OFFICIAL NOTES

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Program of Meetings to Be Held in Chicago, February 15 and 16

The Thirty-Ninth Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, February 15 and 16. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY, FEBRUARY 15, 10 A. M.

Report of the Council on Medical Education and Hospitals of the American Medical Association.
RAY LYMAN WILBUR, M.D., Stanford University, Calif.
Chairman of the Council on Medical Education and Hospitals.
Education and the War.
EDWARD C. ELLIOTT, LL.D., Washington, D. C.
Chief, Professional and Technical Employment and Training Division, War Manpower Commission.
Premedical and Medical Education as Related to the United States Army.
BRIGADIER GENERAL JOSEPH N. DALTON, Washington, D. C.
Assistant Chief of Staff for Personnel, United States Army.
Medical Education as Related to the Procurement and Assignment Service.
HAROLD S. DIEHL, M.D., Minneapolis.
Member, Directing Board, Procurement and Assignment Service for Physicians, Dentists and Veterinarians.
Graduate Education and the War.
DONALD C. BALFOUR, M.D., Rochester, Minn.
Director, Mayo Foundation for Medical Education and Research.

MONDAY, FEBRUARY 15, 2:15 P. M.

MEDICINE AND THE WAR

COL. GEORGE F. LULL, M.D., Washington, D. C.
Chief Personnel Division, United States Army Medical Corps. (Representing the Surgeon General of the United States Army.)
REAR ADMIRAL ROSS T. MCINTIRE, M.D., Washington, D. C.
Surgeon General, United States Navy.
THOMAS PARRAN, M.D., Washington, D. C.
Surgeon General, United States Public Health Service.
Medical Licensure and Civilian Medical Needs.
HARVEY B. STONE, M.D., Baltimore.
Member, Directing Board, Procurement and Assignment Service for Physicians, Dentists and Veterinarians.
Mobilization of Canada's Health Resources for War.
THOMAS C. ROUTLEY, M.D., Toronto, Ontario.
General Secretary, Canadian Medical Association.

THE FEDERATION OF STATE MEDICAL BOARDS

MONDAY, FEBRUARY 15

FEDERATION DINNER

6:30 P. M.

Medical Schools in Wartime.
WILLARD C. RAPPLEYE, M.D., New York.
Dean, Columbia University College of Physicians and Surgeons.
Presidential Address.
JULIAN F. DUBOIS, M.D., St. Paul.
Secretary, Minnesota State Board of Medical Examiners.
Round Table Discussion—State Board Problems.

TUESDAY, FEBRUARY 16, 9:30 A. M.

Medical Licensure in New York State.
ROBERT R. HANNON, M.D., Albany, N. Y.
Secretary, New York State Board of Medical Examiners.
Medical Licensure and Public Health.
FELIX J. UNDERWOOD, M.D., Jackson, Miss.
President-Elect, American Public Health Association; Secretary, Mississippi State Board of Health.
Necessary Legislation for Graduates of Accelerated Medical Courses and Temporary Interstate Relocation of Physicians.
J. W. HOLLOWAY JR., Chicago.
Director, Bureau of Legal Medicine and Legislation, American Medical Association.

TUESDAY, FEBRUARY 16

FEDERATION LUNCHEON

12:30 P. M.

TUESDAY, FEBRUARY 16, 2 P. M.

Basic Science Laws, Boards and Practices in the United States.
ORIN E. MADISON, PH.D., Detroit.
President, Michigan State Board of Examiners in the Basic Sciences.
Materia Medica and Therapeutics: The Inadequacy of Present Day Instruction.
ADAM P. LEIGHTON, M.D., Portland, Maine.
Secretary, Maine Board of Registration of Medicine.
Uniform Interstate Endorsement as a War Emergency Measure.
Speaker to be announced.
Business Session.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Dr. Carver Dies.—George Washington Carver, D.Sc., since 1896 a member of the staff of the Tuskegee Institute, Tuskegee, died at his home on January 5 at the institute, aged 78. He had been in ill health for some months and was confined to his bed for ten days preceding his death. Dr. Carver, at the time of his death, was director of the department of agricultural research at the institute and, since 1935, had been coordinator in a survey conducted by the division of mycology and diseases, Bureau of Plant Industry, U. S. Department of Agriculture. He had studied at the high school in Minneapolis, Kan., graduating in 1894 at the Iowa State College of Agriculture and Mechanic Arts, Ames.

CALIFORNIA

Human Case of Plague.—A case of human plague in a child 2½ years of age was reported in Siskiyou County recently. The onset of the disease was about November 8. The diagnosis was confirmed at the U. S. Plague Laboratory, San Francisco.

Purple Heart Cross Awarded to Dr. Rogers.—Dr. Henry S. Rogers, Petaluma, formerly president of the California Medical Association, recently received the purple heart cross on order of the adjutant general's office in Washington, D. C., "for meritorious army service" in World War I and in recognition of "injuries received in action Sept. 26, 1918, in the Argonne forest on Vaquihill."

Medical Care of Strangers.—The San Francisco County Medical Society recently instituted a twenty-four hour service through which any person entering San Francisco, who has no private physician, may be referred to one of its members. The office of the society has been furnishing lists of five names to any one inquiring for a physician between the hours of 9 a. m. and 5 p. m. Recently, however, through the aid of one of the direct wire exchanges, the same service has been instituted between the hours of 5 p. m. to 9 a. m. The names are taken in rotation from the list of members of the society who have signified their willingness to serve.

Dr. Pinkham to Retire as Secretary of State Board.—Dr. Charles B. Pinkham, San Francisco, secretary-treasurer of the California Board of Medical Examiners since 1913, will retire from this position in February when he reaches the mandatory age limit for leaving state service, according to *California and Western Medicine*. He will continue as a member of the board. At a recent meeting of the board he was reelected secretary. Other officers are Drs. Percival Dolman, San Francisco, president, and George Thomason, Los Angeles, vice president. Dr. Pinkham graduated at the New York Homeopathic Medical College and Hospital in 1899.

Physicians Needed.—The Los Angeles County Civil Service Commission announces vacancies for the position of a physician and of an autopsy surgeon. Applicants for the physician's position, which pays from $235 to $270 a month, must have a degree of medicine and must have completed a one year internship in an approved hospital. In addition to these qualifications, the applicants for the position of autopsy surgeon, with a starting salary of $235 a month, must have at least two years of professional experience in the pathology laboratory of an accredited hospital, medical school or public agency. There will be no written examination for this position. Candidates will be rated on their professional training and experience and on their ability and personal suitability for work as an autopsy surgeon as evidenced by investigation or interview. There are no residence requirements for either position and no age limitations for the "duration of the war" positions. Interested persons should obtain full information and file an application at Room 102, Hall of Records, Los Angeles, on or before January 25 for the physician's position and on or before February 5 for the position of autopsy surgeon.

New Surgical Essay Contest.—The San Francisco Surgical Society announces the inauguration of an annual contest in the field of general surgery for young physicians in San Francisco and vicinity. First prize is $150 and second prize $100. The author must be a physician in the field of general surgery who is in the period of graduate training not more than six years removed from graduation from medical school. The paper submitted must represent original work in the field of experimental or clinical surgery but not necessarily based on an original idea. The author may be aided by associates. The paper must not have been presented or printed, as submitted in its final form, prior to its submission to the society. All papers must be received by the secretary of the society, Dr. John W. Cline, 490 Post Street, San Francisco, and the return address must also be that of the secretary of the society. Papers must be submitted without marks that would identify the author, hospital or institution of origin, and a sealed nontransparent envelop enclosing the name and address of the author must be furnished. If the papers are published, they shall be designated as the prize winning essays of the San Francisco Surgical Society.

COLORADO

First Training School for Control of Cancer.—The Colorado Society for the Control of Cancer held its first training school for city and district chairmen in Denver, Dec. 9-10, 1942, under the direction of Mrs. Emily G. Bogert, state commander, Women's Field Army. Among the speakers were:

Dr. Charles Smith, Relationship of Colorado Society to the American Society for the Control of Cancer, the Colorado Medical Society, and Public Health.
Dr. William W. Haggart, Organization and Function of a Cancer Clinic.
Dr. Roy L. Cleere, Cancer, a Public Health Problem.
Dr. John S. Bouslog, Diagnosis and Treatment of Cancer.
Dr. Edward J. Meister, Importance of Follow-Up Work in Cancer Control.
Dr. Osgoode S. Philpott, Cancer Education in the Control of Cancer.
Mrs. Mary H. Emberton, The Nurse in Cancer Control.
Lieut. Col. Wallace D. Hunt, regional medical officer, Seventh Service Command, subject not announced.

The objectives of the school were to afford a background for cancer control, understanding of cancer control needs, overview of cancer organizations and a knowledge of cancer control program activities.

CONNECTICUT

Physiologist Goes to McGill.—Dr. Hebbel E. Hoff, associate professor of physiology at Yale University School of Medicine, New Haven, has been appointed professor of physiology at McGill University, Montreal. The appointment was effective Dec. 1, 1942.

DISTRICT OF COLUMBIA

Course in Ocular Surgery.—George Washington University School of Medicine, Washington, announces a postgraduate course in ocular surgery, pathology and orthoptics to be given February 15-20. Additional information may be obtained from the secretary, Miss Louisa Wells, 927 Seventeenth Street N.W., Washington, D. C.

ILLINOIS

New Advisory Members on Cancer Control.—Governor Green recently appointed the following as members of the advisory board to the division of cancer control in the state department of public health: Drs. Fauntleroy Flinn, Decatur; James Scott Templeton, Pinckneyville; Edwin F. Hirsch and James P. Simonds, Chicago, and William M. Cooley, Peoria. Unexpired terms are those of Drs. Roswell T. Pettit, Ottawa, and John A. Wolfer, Chicago.

Course on Psychoanalysis and Psychosomatic Medicine.—The Institute for Psychoanalysis opened at the University of Illinois a course on the fundamentals of psychoanalysis and psychosomatic medicine, January 13. The series of lectures, which will be held on Wednesdays through May 26, will cover the following subjects: The nature of psychologic understanding, historical development of the fundamental concepts of psychoanalysis, the fundamentals of psychodynamics. The principle of inertia and the principle of surplus, the fundamentals of psychodynamics, continued (repression, regression, fixation, reaction formation, projection, rationalization, substitution), the process of biologic and psychologic maturation, theory of dreams, development and structure of the personality, psychoanalytic theory of neuroses and psychoses, the principles of psychosomatic medicine, principles of psychoanalytic therapy (adult analysis), other therapeutic applications of psychoanalysis (brief psychotherapy, child analysis, treatment of psychoses).

Chicago

The Christian Fenger Lecture.—William H. Taliaferro, Ph.D., Eliakim Hastings Moore Distinguished Service professor of parasitology and dean of the division of biological sciences, University of Chicago, will deliver the sixth Christian Fenger Lecture of the Institute of Medicine of Chicago and the Chicago Pathological Society, February 8, at the Palmer House. His subject will be "Antigen-Antibody Mechanisms in Immunity to Metazoan Parasites."

INDIANA

Secretaries' Conference.—The annual secretaries' conference of the Indiana State Medical Association will be held at the Indiana World War Memorial, Indianapolis, January 24. The speakers will include:

Dr. John H. Fitzgibbon, Portland, Ore., Oregon Medical Service and Situation in Kaiser Shipyards.
Mr. Rollen W. Waterson, Gary, executive secretary, Lake County Medical Society, Lake County All Out Medical Plan.
Dr. Albert S. McCown, Washington, D. C., Red Cross Activities and Medicine.
Dr. Harold S. Diehl, Minneapolis, 1943 Program of Procurement and Assignment Service for Physicians.
Dr. Charles R. Bird, Indianapolis, Indiana Doctors Carry On.
Dr. Carl Peterson, Chicago, Industrial Health and the War Emergency.

At the dinner session, Brig. Gen. David N. W. Grant, M. C., U. S. Army, Washington, D. C., will discuss "Aviation Medicine and Victory," and Brig. Gen. Fred W. Rankin, M. C., U. S. Army, Washington, President, American Medical Association, "American Medicine at War."

KANSAS

Changes in Health Officers.—Dr. Daniel C. Barrett, formerly of Bloomington, Ind., has been detailed by the U. S. Public Health Service to serve as health officer of Montgomery County, with headquarters in Independence.——Dr. Garfield A. Reutter, formerly of Bigfork, Minn., is the new health officer of Cherokee County.

Salina First City in State to Pass Restaurant Ordinance.—Salina is the first city in the state to pass the U. S. Public Health Service Standard Restaurant Ordinance sponsored by the state board of health. The ordinance regulates eating and drinking establishments and was passed by Salina to control sanitation conditions brought about by the establishment of military centers. The food and drugs division will aid in enforcing the ordinance until it is in complete operation, according to the *News Letter* of the state board of health.

MARYLAND

Night Chest Clinics Opened.—The Baltimore City Health Department recently opened its third diagnostic chest clinic on the fifth floor of the Druid Health Center. The new clinic is for members of the Negro race. Another clinic is for white and Negro patients and one is for white patients only. The city department of health introduced a new night service in these clinics on December 1.

Lewis H. Steiner Fund.—The late Dr. Walter R. Steiner has made the Medical and Chirurgical Faculty of Maryland the residuary legatee of his estate as a memorial to his father, Dr. Lewis H. Steiner of Frederick and Baltimore. A trust fund will be designated the Lewis H. Steiner Fund, the income of which will be used "in perpetuity for the purchase of medical periodicals and of books and monographs dealing with special branches of medicine or surgery." Dr. Steiner also gave his medical books to the association. Dr. Lewis H. Steiner was an active member of the faculty after the period from 1855 until he became librarian of the Enoch Pratt Free Library in 1884. During the Civil War he was chief inspector, U. S. Sanitary Commission, Army of the Potomac. In 1856 he delivered the annual oration before the Medical and Chirurgical Faculty on "The Physiological Properties and Chemical Detection of Strychnia." Many rare and valuable volumes are included in the late Dr. Walter Steiner's gift, which represents a collection of forty years.

MINNESOTA

Physician Awarded Distinguished Service Cross.—Capt. William Wilmerding Moir Jr., M. C., U. S. Army, formerly of Minneapolis, has been awarded the Distinguished Service Cross for extraordinary heroism in action in Northern Africa. According to the *Bulletin* of the Hennepin County Medical Society, Captain Moir, together with members of his paratroop unit, was shot down in a plane near Oran on November 8. His citation reads: "During the attack in the air and the ensuing strafing on the ground, Captain Moir distinguished himself by extraordinary heroism against the armed enemy by inspiring administration of medical attention to wounded personnel before attention to himself, despite severe wounds to his head and back."

Abortionist Sentenced.—On January 2, Sophia Peck, Minneapolis, aged 62, was sentenced by Judge Frank E. Reed of the District Court of Hennepin County to a term of not to exceed four years of hard labor at the Women's Reformatory at Shakopee. Mrs. Peck had been convicted by a jury Dec. 3, 1942. The testimony at the trial showed that the defendant attempted to perform an abortion on an unmarried Minneapolis girl on July 17, 1942 by the use of a rubber catheter. The attempted abortion was a failure and the same procedure was repeated again on September 19 and 24. The patient became seriously ill and was hospitalized twice in October. She subsequently recovered and testified for the state at the trial. The state also had as evidence catheters, instruments and medicinal preparations seized by the Woman's Bureau of the Minneapolis Police Department at the time the defendant was arrested. The defendant told the court that she was a tailor by occupation but had also engaged in the selling of cosmetics. She holds no license to practice any form of healing in Minnesota. Mrs. Peck was tried for a similar offense in October 1937 but was found not guilty by a jury.

NEW YORK

Postgraduate Lectures.—The following series of lectures on general medicine will be presented before the Columbia County Medical Society at the Hudson City Hospital, Hudson:

Dr. Clarence E. de la Chapelle, New York, March 11, Management of Acute Cardiovascular Emergencies.
Dr. Norman H. Plummer, New York, March 25, Newer Chemotherapeutic Methods.
Dr. J. Maxwell Chamberlain, Oneonta, April 8, Benign and Malignant Neoplasms: Diagnosis, Clinical Effects and Treatment.
Dr. Harvey B. Matthews, Brooklyn, April 22, Pelvic Tumors Complicating Pregnancy, Labor and the Puerperium.
Dr. Marjorie F. Murray, Cooperstown, May 6, The Physical Examination of the Child: Its Importance in Diagnosis.

Dr. Abraham C. Silverman, Syracuse, gave a lecture on "Preventive Pediatrics and the Periodic Health Examination" before the Cortland County Medical Society, January 15. These and similar lectures are offered under a cooperative program between the state medical society and the state department of health.

New York City

Anniversary Discourse of Academy of Medicine.—Sir Norman Angell, London, author and lecturer, will deliver the anniversary discourse of the New York Academy of Medicine, January 28, on "The Scientific Method and the World Crisis." The lecture is one of a series of "lectures to the laity," announced in THE JOURNAL, Oct. 31, 1942, page 708.

Atypical Pneumonia and Keratoconjunctivitis Now Reportable.—At a meeting, January 12, the city department of health added to its list of reportable diseases those of primary atypical pneumonia and keratoconjunctivitis. The action was taken because primary atypical pneumonia, also known as virus pneumonia, is reported to be increasing throughout the country and because of the widespread distribution of keratoconjunctivitis in an epidemic form.

Lisa Award for Research in Medicine.—The Alumni Society of the New York City Hospital, Welfare Island, has established the James R. Lisa Award to be given for meritorious work in research medicine done in the laboratories of the hospital under Dr. Lisa's direction, the award to be made by Dr. Lisa at appropriate times to the worker deemed by him to be worthy of it. The prize will consist of a medallion or parchment and an honorarium of several hundred dollars. Dr. Lisa, who graduated at the University of Michigan Medical School, Ann Arbor, Mich., in 1914, is an alumnus of and pathologist to the New York City Hospital, Welfare Island.

Courses for Training in Kenny Method.—The National Foundation for Infantile Paralysis announces that courses of instruction in the Kenny method of treatment for infantile paralysis will be given at the school of education of New York University in cooperation with the college of medicine. The course for physical therapists will be arranged on a part time basis and will continue throughout the semester starting February 3. Registration will be limited to those who are members of the American Physiotherapy Association or the American Registry of Physical Therapy Technicians. Other graduates of recognized schools of physical therapy will be admitted only on special consideration of the qualifications of the applicant. Instructions for physicians and nurses will be offered later. Further inquiries concerning the courses should be directed to Dr. George G. Deaver, School of Education, New York University.

Macy Foundation to Finance Tropical Medicine Research.—A five year program of research and teaching in tropical medicine will be launched soon at the Columbia-Presbyterian Medical Center with the aid of a $150,000 grant from the Josiah Macy Jr. Foundation. According to the New York *Times*, the program has been formulated to meet "a great responsibility" of this country to train doctors and students in tropical medicine. A regular department of tropical medicine will be set up in the De Lamar Institute of Public Health, a division of the medical school of Columbia. The institute is housed in the Washington Heights Health Center. It is

expected that the medical center and the city's health department will cooperate in the new project. Existing laboratory and clinical facilities will be used and the staff of the bacteriology and parasitology laboratories of the various clinical departments will join in the new work. The *Times* also reported that Columbia is endeavoring to obtain the services of the leading men in the tropical field, including a director for the program. Columbia maintains a school of tropical medicine at the University of Puerto Rico, San Juan. This school will be used as a field station whose work will be coordinated with the program in New York. After completing their training in New York, medical personnel will receive additional field training at Puerto Rico and other points throughout the world. In a statement to the press, Dr. Willard C. Rappleye, dean of the Columbia University College of Physicians and Surgeons, New York, said that after the war there will be a tremendous amount of tropical diseases in this country as the result of members of the armed forces returning in large numbers from countries where tropical diseases are widespread. Such areas as Africa, the Solomon Islands, New Guinea, India and Burma were listed as places from which soldiers, sailors and marines will undoubtedly transport diseases. Malaria and dysentery will be the two principal diseases, he stated. The Macy foundation, which recently has concerned itself with medical research as it is related to difficult phases of the war, was established in 1930 by Mrs. Walter Graeme Ladd of Far Hills, N. J., with an initial endowment of $5,000,000 as a memorial to her father.

OHIO

Dr. Ruiz Studying at Health Museum. — Dr. Manuel Urrutia y Ruiz, who is director of the National Hygiene Museum, Mexico City, is taking a three months internship at the Cleveland Health Museum at the suggestion of the Pan American Sanitary Bureau.

General Morgan Gives Morris Lecture.—The sixth annual Roger S. Morris Memorial Lecture was delivered, January 8, in the auditorium of the University of Cincinnati College of Medicine by Brig. Gen. Hugh J. Morgan, chief consultant in medicine to the surgeon general of the U. S. Army, Washington, D. C. General Morgan's subject was "Reflections of an 'Irregular' Army Medical Officer."

Twenty-Eight Years as Society Secretary.—Dr. Alexander S. McCormick, Akron, has retired as secretary of the Summit County Medical Society after holding the position for twenty-eight years. Dr. McCormick, who graduated at the Western University Faculty of Medicine, London, Canada, in 1911, served as secretary of the county medical society from 1913 to 1918, when he refused renomination. In 1921 he was named to the combined office of secretary-treasurer, serving in this capacity until 1940, when the position was separated. He has been secretary since 1940. He was historian of the society from 1919 to 1920. In 1926 he established the *Bulletin* of the society and served as editor and business manager until 1940. Dr. McCormick is still conductor of the Doctors' Symphony Orchestra, which he founded in Akron in 1926. Just recently he was appointed a committee of one to record the medical history of the society.

PENNSYLVANIA

Mr. Rowland Dies.—Mr. Leslie W. Rowland, head of the medical textbook division of the J. B. Lippincott Company, died, January 2, at his home in Swarthmore.

X-Ray Survey Among Union Workers. — Twenty-two cases of tuberculosis were reported out of the first 1,564 persons given x-ray examinations in an effort to determine the extensiveness of tuberculosis among industrial workers carried out by the Erie County Health and Tuberculosis Association. The arrangement was made with the United Electrical, Radio and Machine Workers Local 506 for x-ray examinations of its members and their families, using the rapid paper method. Most of the members were employed at the Erie plant of the General Electric Company. Of the total, 14 were found with cardiovascular disease and 22 with other diseases. The analysis includes studies as to age, sex and occupation. According to the Bulletin of the Pennsylvania Tuberculosis Society, the study is being continued for other members.

Philadelphia

Dr. Eberhard Honored.—The sixty-fifth birthday of Dr. Harry M. Eberhard, since 1925 professor and head of the department of gastroenterology, Hahnemann Medical College and Hospital, was observed with the dedication to him of the November-December issue of the *Review of Gastroenterology*. Dr. Eberhard graduated at Hahnemann in 1898, serving as a member of the teaching staff since 1915 and as vice president of medical affairs since 1940. He has been associate editor of the *Review of Gastroenterology* since 1934.

Courses in Public Health and Preventive Medicine.—The department of public health and preventive medicine at the University of Pennsylvania School of Medicine will begin a series of part time courses sometime in February to cover such subjects as public health administration and communicable disease control. Each course will continue for six or eight weeks. On completion of one course another will be started, in order that students may eventually complete all the work required for the master of public health degree. *Philadelphia Medicine* points out that, while the project is planned in response to requests from physicians, it will be carried out only if the registration of physicians seems to justify the undertaking.

WEST VIRGINIA

New X-Ray and Laboratory Fee Schedule in Effect.—On January 1 changes in the rules and regulations governing the handling of roentgenograms and the payment of x-ray and laboratory fees by the Workmen's Compensation Department went into effect. The new regulations provide that roentgenograms made by hospitals and physicians in connection with the treatment of compensable injuries must be labeled so as to show the date that the film was made, the claim number, the name of the claimant, and the name of the employer and must be retained in the files of the hospital or of the physician making the same for a period of five years from the date of injury. They are to be furnished to the compensation commissioner on written request. Instead of mailing the x-ray films to the commission, the physician in charge of the case will now submit a full written report in triplicate, together with the fee bill on which x-ray charges are made. The regulations further affect the number of roentgenograms and provide flat fees for blood transfusions, operations, anesthesia and laboratory work.

GENERAL

Meetings Postponed.—The Association for the Study of Internal Secretions has indefinitely postponed its 1943 session, which was tentatively scheduled to be held in Cleveland on April 5 and 6.——The 1943 meeting of the Tri-State Medical Association of the Carolinas and Virginia will not be held.

Campaign Opens for Infantile Paralysis Funds. — "Tomorrow's America Will Be as Strong as Today's Children" is the theme of the 1943 campaign to raise funds for the National Foundation for Infantile Paralysis. The drive opened on January 15 and will conclude with the annual celebration of President Roosevelt's birthday on January 30.

New Medical Director of National Drug Company.—Dr. D. Olan Meeker, New York, has been appointed medical director of the National Drug Company. Dr. Meeker has been in general practice in New York and once served as head of the research department of Murray Breese Associates. Herman J. Schneiderwirth, Ph.D., has been appointed director of the research laboratories of the company.

Safety Campaign Opened. — On January 18 a national campaign was launched under the auspices of the War Production Fund to Conserve Manpower to stimulate interest in its program to reduce accidents. William A. Irvin, New York, national chairman of the fund, and Col. John Stilwell, New York, president of the National Safety Council, opened a lecture tour to take them to various places throughout the country, where they will sponsor programs to focus interest on the national program to conserve manpower and reduce accidents.

Decrease in Holiday Deaths.—Only ninety-four accidental deaths occurred in twenty-four states on Christmas Day as compared with 394 reported throughout the country on Christmas Day a year ago, according to a nationwide survey by the Associated Press. The greatest decrease was in highway traffic deaths, fifty-two this year as compared with 301 in 1941. Two persons were killed in a railroad accident in Illinois, the rest of the deaths occurring in different ways. In Buffalo a 14 year old girl was killed by an electric shock when an electric heater fell into a tub of water in which she was bathing. Another "freak" accident occurred in upstate New York when a man, chopping ice from the eaves of his house, fell to his death.

Dr. Schneider Honored for Work on Aviation Medicine.—Edward C. Schneider, Sc.D., Middletown, Conn., since 1919 Daniel Ayres professor of biology at Wesleyan University and who, during World War I, developed a physical fitness

index for testing pilots, will be presented with the John Jeffries Award for 1942 by the Institute of Aeronautical Sciences at its "Honors Night Dinner" in New York, January 26. The award will be given to Dr. Schneider for his pioneering research in aviation and particularly for his development of the physical fitness index, which has been used by the Army and Navy and in civilian aviation for more than twenty years. The award, given annually "for outstanding contributions to the advancement of aeronautics through medical research," is named for Dr. John Jeffries, a Boston physician and the first American to make scientific observations from the air. Dr. Jeffries made his first aerial observations in 1784 from a balloon over London.

Board Examinations.—The next examination of the American Board of Neurological Surgery will be held at the Illinois Neuropsychiatric Institute, Chicago, February 15 and 16. Dr. R. Glen Spurling, 404 Brown Building, Louisville, Ky., is the secretary.——In view of transportation difficulties, the American Board of Psychiatry and Neurology, Inc., will hold regional examinations in May. Proposed places are Boston, Minneapolis, San Francisco, New Orleans and Ann Arbor. The exact time will be settled later, but the practical examinations will take place late in April and early in May, ending just before the meeting of the American Psychiatric Association in Detroit on May 10. One or more of the designated cities may be omitted from the schedule if less than twenty candidates apply for examination there. Written examinations will be given in March in each candidate's immediate vicinity as soon after March 1, the closing date for applications, as arrangements can be made. For details, communicate with the secretary, Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

Pharmaceutical Manufacturers' Award Goes to Dr. Doisy.—Edward A. Doisy, Ph.D., professor and director of the department of biochemistry, St. Louis University School of Medicine, St. Louis, was presented with the annual award of distinction of the American Pharmaceutical Manufacturers' Association at its annual meeting in New York, December 7. The presentation was made by Dr. Torald H. Sollmann, dean and professor of pharmacology and materia medica, Western Reserve University School of Medicine, Cleveland, "in recognition of Dr. Doisy's "isolation in pure form of the female sex hormone estrone (theelin) and his other valuable contributions to knowledge of estrogenic substances important in therapy and research." Dr. Sollmann's address of presentation was entitled "Those Busy Hormones." Other speakers included George R. Cowgill, Ph.D., New Haven, Conn., on hormone developments; Oscar Riddle, Ph.D., Cold Spring Harbor, N. Y., hormone therapy, and Dr. Ephraim Shorr, New York, the future of hormone therapy. In reply, Dr. Doisy gave a brief history of his experiments.

Children's Tumor Registry.—The establishment of a Children's Tumor Registry at the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, has been announced. The project was developed under the auspices of the American Academy of Pediatrics to gather clinical case records under a single committee's supervision in the hope that enough data can be accumulated to warrant accurate conclusions for each of the many forms of childhood cancer from the following aspects: etiology and incidence, pathology of childhood cancer, difficulties in diagnosis, frequency and reasons for delay in diagnosis, average clinical course, and response to various forms of therapy such as radiation and surgery. The varieties of case material include all malignant tumors, with Hodgkin's disease and leukemia; certain benign tumors; tumors that histologically are unusual; those so situated in the body as to endanger life or to be incompatible with it. All hospitals, clinics and members of the medical profession are urged to submit preliminary data on cases believed to be those of malignant tumors in children less than 15 years of age. If the preliminary review of these data indicates that the case is a proper one for acceptance, blank forms will be returned so as to obtain further details including roentgenograms and microscopic slides. If requested, the registry will obtain and forward immediately opinions by recognized authorities as to diagnosis and recommendation for treatment. The registry assumes the responsibility to collect and record follow-up data relating to the further clinical course and end results in all cases. All data and slides should be sent to the Memorial Hospital for the Treatment of Cancer and Allied Diseases, 444 East Sixty-Eighth Street, New York. The case records will be kept at the hospital until the executive committee of the American Academy of Pediatrics directs otherwise. Lieut. Comdr. Harold W. K. Dargeon, M. C., U. S. Navy, pediatrician at the hospital, now on leave of absence for war duty, originated the idea for the registry. A consulting board of pathologists will review the microscopic sections submitted to the registry. It is composed of Drs. Sidney Farber, Boston; Alvin G. Foord, Pasadena, Calif.; Howard T. Karsner, Cleveland; Roy R. Kracke, Atlanta, Ga.; Robert A. Moore, St. Louis; John R. Schenken, New Orleans; Paul E. Steiner, Chicago, and Fred W. Stewart, New York. According to an announcement from the Memorial Hospital, cancer in children is a rare disease compared with that in the adult. On the other hand, the anatomic and histologic forms of malignant tumors which occur in children are more numerous than those which occur in adults. Furthermore, it was stated, the mortality rate of cancer during childhood is extremely high.

Traffic Deaths Show Decrease.—About 28,000 traffic deaths have been reported on traffic death figures for the first eleven months of the year, plus observed trends for December, according to a statement from the National Safety Council. The estimate shows a decrease of about 12,000 as compared with the total of 39,969 reported for 1941. Despite the reduction, the council regards the 1942 toll as the greater blow to the nation's productive effort, since it included among its dead almost 18,000 workers. The nation cannot feel too much satisfaction over the 1942 decrease because most of it resulted automatically from the decline in driving due to gasoline and tire rationing. From the standpoint of the national survey, the deaths of 18,000 irreplaceable workers and the injury of half a million more is a more serious loss than the larger casualty lists of previous years, it was stated. With national gasoline rationing and lower driving speed the traffic death total undoubtedly will decline still further in 1943. The council points out, however, that car pooling means more victims per accident. Progressive deterioration of tires, brakes and cars will increase the hazard. Reports show a definite increase in drinking drivers, it was stated. Any decrease in the 1943 total probably will be chiefly among nonworkers, as in 1942. With more and more men, women and even children going into war work, traffic casualties among workers will be nearly as great as in 1942 unless police, engineers and the individual drivers and pedestrians do their utmost to prevent accidents. November traffic deaths totaled 2,260, a 43 per cent reduction from the 3,960 for November 1941. Even so, the November reduction did not equal the October drop of 49 per cent. The eleven month toll was 25,580, a 29 per cent drop from the 35,770 killed in the first eleven months of 1941. Travel during October, the most recent month for which figures are available, was 20 per cent below 1941. This was no greater than the September drop and is considerably smaller than the decrease in August. Except for the Mountain Region, whose relatively small death totals tend to fluctuate widely, the North Atlantic Region still had the smallest decrease in fatalities of any region. Its November drop was only 26 per cent, against 51 per cent for the South Atlantic Region and 52 per cent in the South Central States. All of the states showed a decrease in traffic accidents for the first eleven months. Rural traffic fatality decreases exceeded urban drops by sizable margins for the eleven month period. November was no exception, with cities showing an average fatality drop of 29 per cent, as contrasted with a national decrease of 43 per cent. Rural deaths in November numbered only half as many as in November 1941. In the first eleven months of the year urban fatalities dropped 16 per cent below the totals for the corresponding period in 1941. Rural fatalities decreased 36 per cent. Except for the very largest cities, those over 500,000, fatality decreases were greatest in the smaller cities. Although cities over 500,000 showed a 17 per cent fatality drop for the first eleven months, the next group of cities, from 250,000 to 500,000 population, showed death reduction averaging only 5 per cent. Toledo, Ohio, continued to lead the death reduction list for large cities with a 46 per cent drop for the first eleven months. Columbus, Ohio, was second with a 41 per cent reduction. Los Angeles and Atlanta, Ga., were in third and fourth places with 37 and 36 per cent drops.

Deaths in Other Countries

Sir William Arbuthnot Lane, consulting surgeon to Guy's Hospital and to the Hospital for Sick Children, London, died in London on January 16, aged 87. He was born in Fort George, Scotland, in 1856 and was educated at Stanley House, Bridge of Allan, and Guy's Hospital Medical School. He had written numerous articles on surgery and anatomy and books on the operative treatment of fractures and cleft palate. Sir William visited the United States in 1925.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 18, 1942.

Civilian Casualties Sustained in Eleven Months of Air Raids

A book published by the Ministry of Home Security tells the story of the heavy air raids on this country for the eleven months that began in the middle of June 1940, when, unlike the present, we had no adequate defenses and millions of men, women and children found themselves in the front line of the war. In the previous great war 300 tons of bombs were dropped on Britain and killed 1,400 persons. In the present war about 36,000 high explosive bombs weighing about 6,600 tons, together with thousands of incendiaries, were dropped in three months on the London region alone, and 12,696 civilians were killed. In one night, May 10, 1941, 1,436 persons were killed in London. Up to the end of 1941 some 190,000 high explosive bombs were dropped on Britain as a whole, and they killed 43,667 civilians, including 5,460 children. Added to this loss of life there were injuries to thousands, and still greater numbers lost their homes.

What was intended to be a knockout blow to London opened on a fine Saturday afternoon, Sept. 7, 1940, when 375 bombers and fighters attacked Woolwich Arsenal and the gas works at Beckton and set docks ablaze. After a break of two hours came a procession of 250 night bombers, guided straight to its target by huge riverside fires. When the big raids began, four fifths of London's auxiliary firemen had never seen a fire. They now had a concentrated experience without parallel in years of peacetime fire fighting. At Woolwich Arsenal men fought the flames in the midst of boxes of live ammunition and crates of nitroglycerin. London was bombed for fifty-seven nights without a break, and then the enemy widened the front to include the arms towns and the ports. First there was the vicious raid on Conventry on Nov. 14, 1940, about which the Germans boasted as something new in the annals of war. The provincial towns shared this special ordeal of the bombardment in a more concentrated form than London, as much smaller spaces were attacked. Merseyside was Hitler's "target number one" outside London. Here many concentrated attacks were made, including one on seven consecutive nights. Today air attacks on this country are so small and so few that already we are beginning to forget what one is like.

The New Regulation for Compulsory Treatment of Venereal Disease

The new regulation making the treatment of venereal disease compulsory in certain cases was described in a previous letter to THE JOURNAL. In a debate in the House of Lords Lord Winster said that more than 70,000 new infections occurred in 1941 and that syphilis had increased 50 per cent in the civilian population. If the fighting services were added the increase would be in the neighborhood of 70 per cent. The position was rendered more serious by the presence in this country of large numbers of service men and women from abroad. There had been complaints among the chiefs of these forces, particularly as to London.

Viscount Dawson of Penn, himself a physician, said that owing to the wartime increase in venereal disease we were back in the same position as in 1932. The women likely to contract the disease belonged to more classes than was formerly the case. In a crowded country such as this we should lose more than we gained by compulsory notification. One woman was known to give syphilis to seven men in the forces in succession; three of them were married and infected their wives. It was the hard core of irresponsible women who must be dealt with. The new regulation making treatment compulsory for any person found to have infected two others was the best under the circumstances.

The bishop of Norwich said that opposition to the new regulation was widespread among people who understood the social aspects of the problem. The anonymous informer was alien to this country. There was a danger that an increase of venereal disease would result from the regulation. There should be more treatment centers. More should be done to appeal for self control as the only way of escape, and there should be a nationwide campaign to instruct young people in the danger of promiscuous relationships.

For the government Lord Snell said that its policy was to control and, if possible, to destroy venereal disease. Before the war it had been reduced, but during the war there had been an increase of 70 per cent, including the forces. We had in Great Britain 249 treatment clinics, of which 18 had been opened since the war began. Five more would shortly be opened. A new scheme had been started in rural areas for providing free treatment under special physicians. The new regulation had been carefully framed to provide equality of treatment for men and women. The tracing of persons who spread infection was not a new practice, for most clinics tried to ascertain the source of infection. Every precaution was taken against the dangers suggested. There were heavy penalties for false information. He would be afraid to trust himself to speak about the injury done by self-righteous pharisees in regard to this matter. If these diseases were hidden it was because those who contracted them were afraid to be considered social outcasts. They thrived in the conditions of secrecy which had existed for many years. The community should take every step to reduce them. It should be the duty of the individual to refrain from contracting such diseases, or, if he did contract them, to get himself cured as soon as possible.

Treatment of Bacillary Dysentery with Sulfaguanidine

At a meeting of the Royal Society of Tropical Medicine Col. N. Hamilton Fairley, F.R.S., presented on behalf of himself and Col. J. S. K. Boyd the results of work done in the Middle East on the diagnosis and treatment of bacillary dysentery. The disease was mild; even with Shiga dysentery the mortality was lower than was expected. But, as the stay in the hospital averaged three to four weeks, the waste of manpower was great. Fly transmission was the rule. In the forward areas all exposed excreta and animal carcasses were burned or promptly treated with insecticides. Where possible trench latrines were immediately dug and provided with fly proof covers if available. Failing this, earth was immediately used to cover the stools, which were sprinkled with powdered borax or some insecticide. Shiga dysentery accounted for 10 per cent of the cases

From a military point of view any one who had colicky pain followed by febrile diarrhea with stools containing flakes of mucus or mucus and blood should be regarded as having dysentery and should be sent away without delay. In the majority of cases ultimate recovery occurred under rest, copious fluids and magnesium sulfate. In milder infections milk drinks could be allowed at a relatively early stage. Serum treatment proved disappointing. It relieved toxic features, presumably by neutralizing circulating toxins, but the benefit was rarely more than temporary.

SULFAGUANIDINE TREATMENT

Two of the first patients treated with sulfaguanidine had received other treatment for three months but none had made any real difference to the ulcers. Within fourteen days of beginning sulfaguanidine treatment the ulcers completely healed and the symptoms disappeared. In a third case of six months' dura-

tion complete healing took place in a fortnight. A much wider investigation was then undertaken in a series of over 500 cases. Care was taken to combat dehydration when present. Administration of sulfaguanidine was followed in some cases by headache or nausea and in a few cases by rash and fever. In 135 proved cases of Shiga dysentery in which recovery occurred under sulfaguanidine, there was usually early astonishing improvement. In 32 cases with an interval from the onset to the beginning of treatment of six to ten days there was an average of 21.7 stools in the twenty-four hours. The number of stools fell to four in three to five days and to two or less in 5.4 days. The stools became formed in an average of 7.15 days. These results were held to indicate an active bacteriostatic effect on the dysentery organism in the bowel wall. Of 12 more chronic cases complete cure was obtained in 9, as shown by sigmoidoscopy. In 2 some diarrhea persisted and there was evidence of sluggish healing.

Precaution Against Dangerous Radiation

Some workers in x-ray departments have fears as to the possible effect on their health of the radiation to which they are exposed. The minister of health has therefore issued a circular letter to hospital authorities on the subject. He is advised that in a well run department where proper precautions are taken the risk to health is small. But he feels that it would be useful to hospitals and would allay groundless apprehension if they had at their disposal a service for the regular measurement of the radiation received by workers in x-ray departments, so that any excessive or dangerous radiation may be discovered and dealt with. He accordingly approached the National Physical Laboratory on the matter. The laboratory has agreed to organize a service for testing the amount of radiation received by the workers, and to advise what action should be taken. The service is designed primarily for diagnostic workers but can be used for therapy workers. It is available to workers in clinics or for private physicians as well as for those employed in hospitals.

The initial test, which should suffice in the majority of cases, consists in the worker carrying a dental film in the breast or waistcoat pocket. These films will be issued and examined by the laboratory and a report on the amount of radiation received by each worker will be sent to the hospital authority. Should the film test show a dose approaching or exceeding the tolerance value laid down by the British X-Ray and Radium Protection Committee, the hospital should arrange for the testing of the x-ray equipment by ionization methods, and for investigation of the workers' technic. These tests may be made by a physicist attached to the hospital, but, if desired, the laboratory will undertake the investigation and advise on the matter. The dental film test should be repeated at regular intervals of three months.

The minister of health advises hospital authorities and others concerned to make the fullest use of the National Physical Laboratory. Although the risks in a well conducted laboratory should be small, x-ray tubes may not under war circumstances reach the high standards of peace time. The laboratory makes the small charge of half a dollar for reporting on each film. Where use is made of the laboratory by the emergency hospital scheme (established for the treatment of civilians injured in air attacks) the minister states that the fees paid will be a proper item for including in the running costs of the hospital in the periodic statement of expenditure.

Pensions for War Injuries

The government has adopted a new scale of pensions for war injuries. The 100 per cent disability pension is $9 a week, apart from family allowances and rank additions. The loss of one eye is now assessed at 40 per cent, compared with 50 in the last war; amputation below the knee with a stump exceeding 4 inches has undergone the same change. Loss of both hands or arms, 100 per cent; amputation at or below the shoulder, 50 to 80 per cent; loss of thumb, 30 per cent; four fingers, 40 per cent; three fingers, 30 per cent, with reduction of 10 per cent if on the left hand; two fingers, 20 per cent. Double amputation of legs, 100 per cent; both feet, 80 per cent; one foot, 30 per cent; amputation at or below the hip, 40 to 80 per cent; loss of all toes on both feet, 20 to 30 per cent; loss of one eye (the other normal), 40 per cent; loss of vision of one eye (the other normal), 30 per cent; loss of a hand and a foot, 100 per cent; severe facial disfigurement, 100 per cent. Total deafness, 100 per cent, as compared with 70 in the last war.

Medical Aid from South Africa for Russia

It is announced from Johannesburg that 10,000 doses of anti-gas gangrene serum and 2,000 doses of antibacterial dysentery serum are to be sent from the South African Institute of Medical Research to Moscow by air at the urgent request of the Soviet government. It is planned to dispatch a similar consignment each month at a cost to the Medical Aid to Russia Fund of about $24,000. Later between 30,000 and 40,000 doses of antityphus vaccines will also be sent each month at a cost of between $6,000 and $8,000. It is estimated that thousands of Russian lives will be saved by the timely administration of the serums, which should reach the Russian fronts within ten days or a fortnight of leaving South Africa.

Cod Liver Oil and Fruit Juices for Young Children and Expectant Mothers

Under the rationing system of the war, the government entirely controls our food supply. Great attention has been paid to the supply of vitamins, such as cod liver oil and fruit juices for young children and expectant mothers. But the minister of health regrets that only a comparatively small percentage of children eligible are now being given the benefit of these special preparations. With the minister of food he will undertake an extensive publicity campaign to impress on mothers their value, particularly during the winter months. It is recognized that not all women can take cod liver oil, but those who can should be encouraged to do so.

Anglo-Soviet Medical Collaboration

The Anglo-Soviet Medical Council was formed soon after the attack of Germany on Russia to promote medical collaboration between Britain and Russia. It provides translations of the articles which have appeared in one country for publication in the other. A team of thirty-five translators have recently completed the translation into Russian of Reviews of British War Medicine. The book was formally presented to Mme. Maisky, wife of the Russian ambassador, by Sir Alfred Webb-Johnson, president of the council and also of the Royal College of Surgeons. Three thousand copies of volume 1 have gone to Russia, and volume 2, which deals mainly with thoracic surgery, has gone to press.

Government Inaugurates Scheme for Cleaner Milk

As a first step toward a cleaner milk supply, laboratory equipment for testing has been installed at more than a thousand large depots where milk is received. Arrangements for training testers, mainly young women, as the scheme develops, are being made. It is hoped that one result will be great reduction in the waste through souring next summer. Other openings in the milk industry are forecast in the decision to set up a national milk recording scheme. This will provide for monthly weighings of each cow's milk. Production will then influence rationing allowances. The scheme is also intended to help in the breeding of high milk production stock.

BRAZIL

(From Our Regular Correspondent)

Nov. 12, 1942.

Pollen Allergy

The problem of pollen allergy is a new one in Brazil. Dr. Ernesto Mendes of São Paulo in a recent paper says that allergic conditions with such a seasonal character that one could assume the pollen to be their cause are not found in Brazil. His conclusions were reached after the examination of 124 patients, 63 per cent of whom had bronchial asthma and 37 per cent had perennial rhinitis. He used one hundred extracts, and among these twenty were made with pollens from plants of the city of São Paulo and its vicinity. Of the total number of patients 10.5 per cent showed slight cutaneous reactions to the pollen extracts, but among those who were subjected to allergic rhinitis the positive reactions to pollen reached the higher rate of 13 per cent. Nearly all the patients reacted to more than one extract. The plants that elicited more reactions were those of the species Eucalyptus globulus (3.2 per cent), Amarantus sp. (1.6 per cent), Chenopodium ambrosioides (1.6 per cent) and Ambrosia polystachia (1.6 per cent). Cutaneous reactions to pollen alone were not observed, and many positive cutaneous reactions to pollen extracts should be regarded as nonspecific, since the passive transfer test, which was performed in 9 cases, gave positive results in only 2. The findings apparently demonstrate that pollen allergy is exceptional in the particular subtropical area referred to and it can be detected only through allergy tests, as no clinical symptoms are observed. The extremely low incidence of pollen allergy in Brazil is due to the environment rather than to the individual peculiarities, as the potent allergenic plants are few in this country, and the meteorologic conditions do not favor high concentrations of the pollens in the air, particularly in the region of the city of São Paulo. The pollens which reach in the atmosphere of São Paulo sufficiently high concentration to produce pollen allergy are of doubtful allergenic action (Eucalyptus and Parthenium hysterophorus, between November and February, and Melinis minutiflora in June and July). The pollens of potent allergenic plants were found in number lower than 15 per cubic centimeter (Cynodon dactylon in January and February, Ambrosia polystachia from December to March and Amarantus from January to April). Some interesting clinical facts have also to be recalled, as, for example, people who suffer from pollinosis in other countries are relieved by moving to Brazil.

Wild Fire (Pemphigus foliaceus)

For the past few years an ever increasing number of cases of a malignant type of pemphigus foliaceus has been reported mainly in the rural areas of the state of São Paulo but also in the central states of Mato Grosso, Minas Geraes, Bahia and Goiás and in the neighboring regions of Paraguay and Bolivia as well. Although the clinical symptoms of pemphigus foliaceus in Brazil are the same as found elsewhere, the itching, burning and acute pain are much more severe and have given rise to the popular name of "fogo selvagem" (wild fire). In São Paulo alone there are now about 700 cases of the disease. The classic writers stated that the disease was neither epidemic nor contagious, and some of them have ignored the existence of its peculiar manifestations concerned with the tropics, the condition being attributed to toxins, to neuropathic influences, to Bacillus pyocyaneus and the like. Dermatologists apparently agree that, whatever its origin, the disease is rare. But the Brazilian experience of recent years contradicts many of these views. The problem became so acute that the state of São Paulo created a special service against the disease, provided with a special hospital of 100 beds, and the federal government is building three more of them. It is now proved that the condition is not transmissible by direct contact. Well and sick people live in close association during a considerable period of time, and new cases do not arise. The rural areas that constitute the foci are well defined. Suddenly the disease appears in a new area, without any apparent connection with the former. In the large cities there are no autochthonous cases, but only those that come to the hospitals. The incidence is higher among women than among men (in the ratio of 3:2) and also higher among people of poor social and economic conditions. Some authors believe in a food deficiency cause, but the poorer zones of the state of São Paulo (the littoral and the northern zones, for instance) are clearly spared. All the lowlands are also free from the disease. The characteristic elementary lesion is a serous purulent bulla on the face, chest and legs, and then the eruption tends to generalize. It must be distinguished from Duhring's dermatitis (which has a different localization with a good general health), from subacute Brocq's type of pemphigus with extensive bullae, from the true acute infectious pemphigus and from bullous impetigo. Once initiated, wild fire may develop into one of four types: acute, subacute (most common), superacute (generally fatal after a short period of illness) or chronic. In the chronic cases, nails take a yellowish tint, as if dipped in iodine (Vieira's sign). In most cases itching is a predominant symptom, but a warm, burning sensation is usually commoner.

After failing to find a visible microbic cause of the disease, Lindenberg of São Paulo decided that, in view of the obvious infective nature of wild fire, a virus must be responsible. He tried the transmission of the disease to rabbits and thinks that he succeeded, but J. P. Vieira, an authority on the subject, failed to confirm Lindenberg's results. The low alkali reserve of the blood suggests the necessity of some special diet. The treatment must be begun early, with antiseptic baths, quinine by mouth and protection of the skin with a heavy layer of borated petrolatum or else the disease goes on, and there is no cure possible. The Brazilian pemphigus foliaceus is a serious problem awaiting particular attention and continuous study.

Marriages

HENRY WILLIAM SCOTT JR., Graham, N. C., to Miss Mary Louisa Vanamee of Cape Elizabeth, Maine, at Portland, Maine, October 17.

WILLIAM A. VAN NORTWICK, Greenville, N. C., to Miss Grace C. Taylor in Morehead City, November 7.

ROBERT HENRY CLEVELAND to Miss Hannah Elizabeth Eubank, both of Jacksonville, Fla., October 10.

MARION LAWRENCE WHITE JR., Reedville, Va., to Miss Emma Cassandra Macon at Orange, November 22.

JAMES LAFAYETTE JORDAN JR. to Miss Mary Katherine Boswell, both of Huntsville, Ala., recently.

HELEN WHITTEMORE BANE, Brainerd, Minn., to Mr. Henry Longfellow of Beloit, Wis., December 9.

WILLIAM H. WALTERS JR., Lacoochee, Fla., to Miss Helen Hancock in Jacksonville in November.

LAWRENCE E. METCALF, Asheville, N. C., to Miss Margaret John Holland in Detroit, October 17.

PETER JOHN FLIPPIN JR. to Miss Helen Marguerite Cruze, both of Knoxville, Tenn., October 24.

PAUL J. ISEN, Fort Howard, Maryland, to Miss Regina Nelson of New York, December 20.

ABRAM BERRY, Columbia, S. C., to Miss Bernice Frances Coleman of Charleston, October 18.

OREN A. ELLINGSON, Brooklyn, to Miss Florence Rosamond Carson at Nashville, Tenn., recently.

JENNINGS KERR OWENS, Bennettsville, S. C., to Miss Grace S. Buie of Denmark, November 28.

JAMES J. O'HALLORAN, Moline, Ill., to Miss Camille Nolan of Davenport, Iowa, November 26.

HUBERT CLAYTOR JR., Hopkins, S. C., to Miss Florence Rivers Armour at Eastover, October 18.

Deaths

Howard Atwood Kelly ✠ world famed as a pioneer in gynecology, died at the Union Memorial Hospital, Baltimore, January 12, aged 84, of generalized arteriosclerosis and uremia. His death preceded by a few hours that of his wife, who lay ill in an adjoining room.

Dr. Kelly was born in Camden, N. J., Feb. 20, 1858; he received his bachelor of arts degree at the University of Pennsylvania, Philadelphia, in 1877 and his medical degree at the same university in 1882. While a resident physician in the Episcopal Hospital, Dr. Kelly developed a gynecologic dispensary clinic. On completion of his internship he established a two room hospital, which later became the Kensington Hospital, to be supported by voluntary contributions. He was called from his position as associate professor of gynecology at the Pennsylvania Department of Medicine to become the first professor of gynecology and obstetrics at Johns Hopkins University and obstetrician in chief to the Johns Hopkins Hospital, Baltimore. In these early days Dr. Kelly's hospital work was limited to gynecology. The opening of the medical school in 1893 and the need for obstetric facilities were responsible for the separation in 1899 of the department of obstetrics and gynecology into two divisions. From then on Dr. Kelly concentrated all his efforts on the development of gynecology. He had been emeritus professor of gynecology at the medical school since 1919 and consulting gynecologist to the hospital since the same year. In 1892 he was responsible for the establishment of the sanatorium which bore his name. In 1913 the institution, which closed in 1938, became the Howard A. Kelly Hospital. Here he served at various times as radiologist and surgeon, physician in chief and superintendent.

HOWARD ATWOOD KELLY, M.D., 1858-1943

Throughout the years, Dr. Kelly showed himself to be a pioneer in numerous forms of medical study. He was one of the first to use cocaine for local anesthesia. His work in abdominal surgery was revolutionary and his early interest in cancer and radiation resulted in many brilliant contributions. He is the inventor of the Kelly pad, rectal and vesical speculums and an operative technic which bears his name. In 1933, at a special assembly to honor him on his seventy-fifth birthday, Dr. Kelly was credited by Max Brödel with the successful development of medical illustration as a specialty.

During his career many honors were bestowed on him. He was an honorary member and fellow of numerous scientific societies, including the Chicago Gynecological Society, American Urological Association, Seaboard Medical Association, Virginia and North Carolina medical societies, American Radium Society, American Association for the Advancement of Science, American Geographic Society, Maryland Academy of Sciences, of which he was a life member, Natural History Society of Maryland, Philadelphia Academy of Natural Sciences, New York Zoological Society, New York Botanical Gardens, American Museum of Natural History and American Society of Ichthyologists and Herpetologists. In addition, Dr. Kelly held honorary memberships in many European groups. He was president of the Southern Surgical and Gynecological Society in 1907 and of the American Gynecological Society in 1912. He was secretary of the Section on Obstetrics and Diseases of Women of the American Medical Association from 1890 to 1891 and a founder member of the American College of Surgeons in 1913. In 1928 he gave the Hunterian Lecture in the Mansion of the Lord Mayor of London. The occasion marked the two hundredth anniversary of the birth of John Hunter.

Dr. Kelly wrote extensively on a variety of subjects. His works include Operative Gynecology (two volumes, 1898, 1906); Vermiform Appendix and Its Diseases (with Elizabeth Hurdon), 1905; Walter Reed and Yellow Fever, 1906, 1907 and 1923; Gynecology and Abdominal Surgery, edited with C. P. Noble, volume 1, 1907, volume 2, 1908; The Stereo-Clinic (eighty-four sections), 1908-; Medical Gynecology, 1908 and 1912; Appendicitis and Other Diseases of the Vermiform Appendix, 1909; Myomata of the Uterus (with T. S. Cullen), 1909; Cyclopedia of the American Medical Biography, two volumes, 1912; Some American Medical Botanists, 1913; Diseases of the Kidneys, Ureters and Bladder (with C. F. Burnham, two volumes), 1914 and 1922; American Medical Biographies (with W. L. Burrage), 1920; A Scientific Man and the Bible, 1925; Gynecology, 1928; Dictionary of American Medical Biography (with W. L. Burrage), 1928; Electrosurgery (with Grant E. Ward), 1932.

Frequently referred to as "the father of gynecology," Dr. Kelly is the last of the memorable four of medicine represented in Sargent's famous portrait of Osler, Halsted and Welch.

Dr. Kelly was a man of broad interests and great enthusiasms. His active mind, his arresting personality and his extraordinary skill attracted to him students from all over the world. His intellectual curiosity in many fields apart from medicine kept him in the forefront of public interest. Besides gynecology and surgery he was competent in the fields of botany, natural history and anthropology, and he did not hesitate to express himself regarding politics and religion. His religious beliefs inclined toward fundamentalism, and he was at the time of his death a member of the board of the William Jennings Bryan University at Dayton, Tenn. He was also an ardent advocate of prohibition of alcoholic liquors and of strict observation of the Sabbath. In behalf of these interests he spoke and wrote frequently. He had been in his youth a champion swimmer, a competent cowboy and an expert canoeist, and his knowledge of poisonous snakes made him a recognized authority in that field. His friends and correspondents were legion. Even those with whom he debated fiercely and at length honored him for his intellectual integrity.

Aaron Joshua Rosanoff ✠ Beverly Hills, Calif.; Cornell University Medical College, New York, 1900; director of state institutions from 1939 to 1942; for many years a member of the Los Angeles County Lunacy Commission; member of the American Psychiatric Association; a charter member, board member and past president of the Southern California Academy of Criminology; a charter member, board member and past president of the Southern California Society for Mental Hygiene; at one time professor of medicine (psychiatry), College of Medical Evangelists, Los Angeles; lecturer in psychiatry at Columbia University, New York, from 1919 to 1921 and formerly at the University of Southern California, Los Angeles; during World War I served in the neuropsychiatric service of the U. S. Army, treating victims of shell shock and similar injuries; for his work in this field was the recipient of a special citation from the government; a captain and major in the medical corps of the U. S. Army from 1917 to 1919 and a lieutenant colonel in the medical reserve corps from 1920 to 1930; organized and founded the Langley Porter Clinic, San Francisco; specialist certified by the American Board of Psychiatry and Neurology, Inc.; junior assistant physician at the Kings Park (N. Y.) State Hospital from 1902 to 1905, assistant physician from 1905 to 1908, senior assistant physician from 1908 to 1911 and clinical director from 1911 to 1922; owner and medical director of the Alhambra Sanatorium, Rosemead; consulting psychiatrist to the Kaspare Cohn Hospital, Los Angeles, from 1923 to 1928; co-author of "Etiology of Mental Deficiency with Special Reference to Its Occurrence in Twins," psychologic monographs published in 1937; author of "Manual of Psychiatry and Mental Hygiene," seventh edition published in 1938; an associate editor of the *American Journal of Psychiatry*; aged 64; died, January 7, of carcinoma of the lungs.

A. Noah Schiller ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1907; member of the American Academy of Ophthalmology and Otolaryngology; one of the founders of the Jewish Memorial Hospital, where he was honorary chairman and chairman of the medical board, consulting otolaryngologist and for many years chief of the department of otolaryngology, consulting otologist and attending physician in the ear, nose and throat division of the New York City Hospital, Welfare Island; aged 58; died, December 17, in Miami Beach, Fla., of coronary occlusion.

Seavy Highsmith ✠ Fayetteville, N. C.; University College of Medicine, Richmond, 1901; member of the Southern Medical Association; past president of the Cumberland County Medical Society; member and in 1939 president of the Fifth District Medical Society; member and past vice president of the Tri-State Medical Society; vice president of the North Carolina League for Crippled Children; aged 68; co-owner and secretary of the Cumberland General Hospital from 1917 to 1927; from 1905 to 1917 on the staff of the Highsmith Hospital, where he died, December 8, of heart disease.

John Mitchel Johnson Jr., San Saba, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1936; practiced at Longview, where he served on the staff of the Van Sickle Clinic-Hospital; aged 31; was commissioned a lieutenant, junior grade, in the medical corps of the U. S. Naval Reserve and began active duty in March 1942; had recently been promoted to lieutenant, senior grade; was killed in action recently somewhere in the Pacific.

KILLED IN ACTION

LIEUT. JOHN MITCHEL JOHNSON JR., M. C., U. S. N. R., 1911-1942

James Gordon Henderson, Beverly Hills, Calif.; Stanford University School of Medicine, San Francisco, 1925; formerly assistant clinical professor of surgery (genitourinary) at his alma mater; member of the American Urological Association; resident physician, St. Francis Hospital, 1925-1926; resident in urology at the Stanford University Hospital from 1926 to 1928; visiting urologist, Laguna Honda Home, from 1928 to 1931; assistant visiting urologist at the San Francisco Hospital for many years; urologist, San Francisco Polyclinic, from 1929 to 1935; aged 44; died in November.

Charles Blanchard Bard, Water Valley, Ky.; University of Louisville Medical Department, 1912; member of the Kentucky State Medical Association; served overseas during World War I; aged 54; died, December 3, at the Mayfield (Ky.) Hospital of coronary heart disease.

L. Ernest Belanger, Montreal, Que., Canada; M.B., School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal in 1907, and M.D. in 1909; aged 60; died, November 12.

Edward J. Broderick, St. John, N. B., Canada; McGill University Faculty of Medicine, Montreal, Que., 1890; aged 76; died, December 1.

Eugene Carmichael, Cedar Rapids, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1900; aged 74; died, November 29, of angina pectoris.

George Bradford Curry, Bolivar, Tenn.; Memphis Hospital Medical College, 1903; aged 66; died, November 28, in the Baptist Memorial Hospital, Memphis, of intestinal obstruction.

Albert Downing, Carleton Place, Ont.; Canada; University of Toronto Faculty of Medicine, 1895; for a number of years served as a member of the board of education and as deputy reeve; medical officer of health for Carleton Place; appointed a coroner for the county of Lanark while practicing at McDonald's Corners and continued to serve in that capacity during his residence in Carleton Place; aged 68; died, October 16.

Rufus Cecil Franklin ✠ Swainsboro, Ga.; University of Maryland School of Medicine, Baltimore, 1907; member of the Southeastern Surgical Congress; president and secretary of the Emanuel County Medical Society; had been a member of the city council and chairman of the local school board; director of the Citizens' Bank; medical superintendent and owner of the Franklin Hospital; aged 61; died, December 4, in a hospital at Atlanta of hemiplegia.

Albert Lincoln French, Lincoln, Neb.; Medical School of Maine, Portland, 1882; aged 82; died, December 3, in St. Elizabeth Hospital of carcinoma of the liver.

Ralph Winward French ✠ Fall River, Mass.; Harvard Medical School, Boston, 1910; specialist certified by the American Board of Surgery; member of the New England Surgical Society; fellow of the American College of Surgeons; aged 59; was instrumental in establishing a training school for nurses and a member of the surgical staff of the Truesdale Hospital, where he died, December 7, of a spontaneous subarachnoid hemorrhage.

John Phillip Gibbs ✠ Chicago; Harvey Medical College, Chicago, 1905; for many years on the staff of St. Elizabeth Hospital; aged 79; died, December 5, in Spring Grove, Ill., of arteriosclerosis.

Lindon Lemuel Gillett, Suffern, N. Y.; University of Wooster Medical Department, Cleveland, 1887; aged 77; died, November 8, in the Hackensack (N. J.) Hospital of diabetes mellitus and a fracture of the femur resulting from a fall.

Charles Judson Gordon, Sicily Island, La.; Kentucky School of Medicine, Louisville, 1898; member of the Louisiana State Medical Society; aged 69; died, December 4, of heart disease.

Richard H. Greenwell, Bardstown, Ky.; Hospital College of Medicine, Louisville, 1906; member of the Kentucky State Medical Association; secretary of the Nelson County Medical Society; health officer of Nelson County; aged 64; died, December 6.

James Richard Greer, Danville, Ill.; Rush Medical College, Chicago, 1912; formerly assistant clinical professor of medicine at his alma mater; member of the medical staff of the Presbyterian Hospital, Chicago, from 1913 to 1929; aged 66; died, December 1, of acute dilatation of the heart following chronic myocardial degeneration.

J. L. Griffin, Vanndale, Ark.; Memphis (Tenn.) Hospital Medical College, 1903; member of the Arkansas Medical Society; aged 67; died, December 2.

Emery Fremont Griffith, Peru, Iowa; College of Physicians and Surgeons, Keokuk, 1887; aged 81; died, November 9, of cerebral hemorrhage.

Edward Cleveland Hagler, Tuscaloosa, Ala.; Medical College of Alabama, Mobile, 1904; member of the Medical Association of the State of Alabama; served in the medical corps of the U. S. Army during World War I; aged 63; died, December 4.

Joseph W. Halford, Raleigh, N. C.; George Washington University School of Medicine, Washington, D. C., 1904; was vice president of the bank of Lillington; had served as chairman of the county board of commissioners and as mayor of Lillington; aged 72; died, November 28, in Lillington of burns received when he fell asleep while smoking.

William Heston Harper ✠ Columbus, Ohio; Ohio Medical University, Columbus, 1901; aged 69; died, December 6.

Gray Godwin Holladay, Portsmouth, Va.; Bellevue Hospital Medical College, New York, 1893; fellow of the American College of Surgeons; served in the U. S. Navy during World War I; in 1917 was senior medical officer of the transport *George Washington,* which brought the King and Queen of Belgium to the United States; was decorated by the King with the Belgian Order of Leopold; for many years surgeon for the Seaboard Air Line Railway, and city coroner of Portsmouth; aged 72; died, November 26, in the King's Daughters' Hospital of chronic myocarditis and carcinoma of the jaw.

Walter B. Holmes, Wadley, Ga.; Baltimore Medical College, 1892; member of the Medical Association of Georgia; aged 72; died recently.

John H. Horne, Robesonia, Pa.; Jefferson Medical College of Philadelphia, 1891; member of the Medical Society of the State of Pennsylvania; aged 77; died, November 14.

Edwin Everett Jack, Brookline, Mass.; Harvard Medical School, Boston, 1887; member of the Massachusetts Medical Society, the American Ophthalmological Society, the Association for Research in Ophthalmology, Inc., and the New England Ophthalmological Society; specialist certified by the American Board of Ophthalmology; consultant, Children's Hospital, Boston, from 1895 to 1918; member of the consulting staff, Massachusetts Eye and Ear Infirmary, Boston; aged 79; died, November 16, of angina pectoris.

Leo Harold Joyce ✠ Passaic, N. J.; Baltimore Medical College, 1902; was president of the Passaic County Maternal Welfare Association; aged 64; formerly chief of staff of St. Mary's Hospital, where he died, December 7.

Maurice Kahn ✠ Chicago; Baltimore University School of Medicine, 1903; on the staff of the Evangelical Hospital; aged 66; died, December 8, in the Albert Merritt Billings Hospital of carcinomatosis.

Enos E. Kincheloe, Church Hill, Tenn.; University of Tennessee Medical Department, Nashville, 1891; aged 79; died, November 5.

August E. Kipp, Cincinnati; Cincinnati College of Medicine and Surgery, 1890; aged 93; died, November 12, of intestinal obstruction and peritonitis.

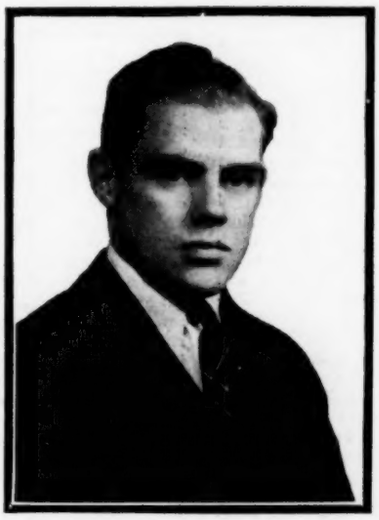
William Sherman Lessenger, Mount Pleasant, Iowa; State University of Iowa College of Medicine, Iowa City, 1890; member of the Iowa State Medical Society; aged 74; died, November 28.

Samuel Stockton Miles, Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1940; had been medical resident to the City Hospital, Winston-Salem, N. C., since July 1, 1941; commissioned a lieutenant (j. g.) in the medical corps of the U. S. Naval Reserve in May 1942; attached to the Marine Corps; aged 28; was killed in action at Tulagi on the Florida Island in the Solomons, August 7.

George Samuel Laird ✠ Westfield, N. J.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901; served as a lieutenant in the medical corps of the U. S. Army during World War I; recently chief of the medical staff of the Selective Service Board number 4; for many years member of the board of health and chief medical inspector for the school system; director of the First National Bank; aged 65; on the staff of the Children's Country Home and the Elizabeth (N. J.) General Hospital, where he died, December 1.

Ardashes H. Merdinyan, Pawtucket, R. I.; Medico-Chirurgical College of Philadelphia, 1905; member of the Rhode Island Medical Society; past president and secretary of the Pawtucket Medical Association; medical examiner for the local board, division number 1, during World War I; served as medical inspector of the schools of Central Falls; aged 65; died, November 26, of coronary thrombosis.

KILLED IN ACTION



LIEUT. SAMUEL STOCKTON MILES, M. C., U. S. N. R., 1913-1942

Edward Sanford Montgomery, Santa Cruz, Calif.; Rush Medical College, Chicago, 1894; aged 70; died, November 29.

Edith Taft Morehouse, Westfield, N. J.; Woman's Medical College of Pennsylvania, Philadelphia, 1913; in 1918 went to France with the American Woman's Hospital of the American Red Cross to engage in rehabilitation work among children in areas devastated by World War I; at one time appointed by the foreign missionary society of the Methodist Church as superintendent of a hospital at Kolar, South India; aged 68; died, December 13, in the Muhlenberg Hospital, Plainfield, of Parkinson's disease.

Joseph D. Morgan, Dixon, Ohio; Georgia Eclectic Medical College, Atlanta, 1881; served as state senator for two terms; aged 85; died, December 11, of senility.

Andrew B. Nelles, Blacklick, Ohio, University of Michigan Homeopathic Medical School, Ann Arbor, 1890; for many years on the staff of the Children's Hospital, Columbus; aged 73; died, November 23, of pneumonia.

John S. Nelson, Fort Dodge, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1888; aged 82; died, November 12, of cardiorenal vascular disease.

George Harvey Parmenter ✠ St. Petersburg, Fla.; University of Vermont College of Medicine, Burlington, 1902; member of the Vermont State Medical Society; at one time chief of the medical staff of the U. S. Veterans' hospitals in Des Moines and Fort Harrison, Mont.; aged 66; died, November 27, in Veterans Administration Facility, Bay Pines, of arteriosclerosis and myocardial failure.

Arthur Madison Phillips, New York; University of Buffalo School of Medicine, 1902; member of the Medical Society of the State of New York and the American Psychiatric Association; instructor of psychiatry at the Cornell University Medical College; assistant superintendent of the Manhattan State Hospital, Ward's Island, where he began active duty in 1904; aged 64; died, December 16, in the New York Hospital of aneurysm of a ruptured abdominal aorta.

Isaac William Powell, Bellingham, Wash.; Kentucky School of Medicine, Louisville, 1894; formerly health officer of Bellingham; at one time acting assistant surgeon in the U. S. Public Health Service; served during World War I; aged 68; died, November 17.

James Daniel Renick, Smiths Grove, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1880; aged 86; died, November 28.

James C. Rush, Waynesboro, Miss.; University of Louisville (Ky.) Medical Department, 1892; aged 75; died, November 23, in the Rush's Infirmary, Meridian, of sarcoma of the prostate and angina pectoris.

Harry Johnson Schott, Los Angeles; Rush Medical College, Chicago, 1911; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; specialist certified by the American Board of Orthopaedic Surgery, Inc.; served during World War I; chief orthopedic consultant to the city schools; aged 55; on the staffs of the Orthopaedic Hospital and St. Vincent's Hospital, where he died, November 24, of an intracapsulary fracture of the right femur due to a fall and pulmonary embolism.

James F. Simkins, Circleville, Ohio; Western Pennsylvania Medical College, Pittsburgh, 1891; aged 83; died, November 27.

Walter E. Storm, Wilmington, N. C.; New York Homeopathic Medical College, New York, 1877; member of the Medical Society of the State of North Carolina; aged 87; died, November 12.

Ernest Hamilton Streit, Portland, Ore.; Jefferson Medical College of Philadelphia, 1912; served during World War I; aged 56; died, November 6.

Hal Shackelford Tucker, Laurel, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1887; aged 88; died, December 1.

Edwin Hugh Van Patten, Dayton, Wash.; Rush Medical College, Chicago, 1883; aged 87; died, November 28.

Robert Reynolds Vogt, Cleveland; University of Wooster Medical Department, Cleveland, 1894; aged 70; died, November 8, of cerebral hemorrhage.

Edward Everett Watts, Gifford, Idaho; Eclectic Medical Institute, Cincinnati, 1892; aged 88; died, November 14, in St. Joseph's Hospital, Lewiston, of myocarditis.

John Horace Wrork ✠ Shelburn, Ind.; Illinois Medical College, Chicago, 1904; president of the Sullivan County Medical Society; for many years member of the Sullivan County Council; aged 72; died, December 1, in the Mary Sherman Memorial Hospital, Sullivan, of cerebral hemorrhage.

DIED WHILE IN MILITARY SERVICE

Frederick James Cunningham Smith ✠ Ardmore, Okla.; Harvard Medical School, Boston, 1932; a diplomate of the National Board of Medical Examiners; commissioned a first lieutenant in the Army of the United States; called to active duty Feb. 13, 1941; later held the temporary rank of captain; aged 35; died, September 9, while in Australia.

Leo Paul Martin ✠ Missoula, Mont.; Creighton University School of Medicine, Omaha, 1927; captain in the medical corps of the Army of the United States; died, October 25, at Walla Walla, Wash., where he was station complement flight surgeon, aged 38.

Bureau of Investigation

DANGEROUS TO HEALTH

When Used as Directed

[EDITORIAL NOTE.—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they include reference to the fact that these nostrums were specifically declared to be dangerous when used in accordance with the directions given on the label by the manufacturer. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

B-D-Mint Powders.—South Bluefield Pharmacy, Inc., Bluefield, W. Va. Shipped Oct. 25, 1940. Composition: in each powder approximately 3.83 grains of acetophenetidin, 2.23 grains of acetanilid, 1.5 grains of citrated caffeine and 3.6 grains of sodium bicarbonate, with unreported amounts of milk sugar, saccharin for sweetening and peppermint oil for flavoring. Adulterated because label falsely claimed that each powder contained not over 2½ grains of acetophenetidin. Misbranded because dangerous to health if used as directed in the labeling; also misbranded because claims on display card, "no harmful ingredients," among others, and the designation "B-D-Mint" were false and misleading, since the product contained potentially harmful ingredients, was not free from danger, might cause serious after-effects and the chief active ingredients were not derived from mint. Again misbranded because claims on wrapper that product offered quick relief from pain and discomfort arising from simple headache, neuralgia, muscular aches and pains and head colds, was a nerve sedative, and relieved female pains, rheumatism, earache, toothache and fever were false and misleading; and likewise was the statement, "Prepared by B. D. Medicine Co., Pulaski, Va.," since the product had actually been prepared by the South Bluefield Pharmacy, Bluefield, W. Va. Further misbranded because label failed to bear the common or usual name of each active ingredient and a correct statement of the quantity or proportion of acetanilid and acetophenetidin present, as well as adequate directions for taking and sufficient warnings against use in those pathologic conditions, or by children, when its employment might be dangerous to health, and against unsafe dosage or methods or duration of administration.—[*D. D. N. J., F. D. C. 429; September 1942.*]

Casey's Compound.—George E. Madison Company, San Francisco, Calif. Shipped Feb. 12, 1941. Composition: a flavored syrup containing 19.8 grains of potassium iodide per fluid ounce. Misbranded because dangerous to health when used in the dosage and with the frequency and duration prescribed, suggested and recommended in the labeling; also because label failed to bear adequate directions for taking, or sufficient warnings against use in conditions wherein it may be dangerous to health, or caution against unsafe dosage or duration of administration. Further misbranded because of false representations in leaflets supplied to customers on request, namely, that the product is efficacious in relieving arthritis, neuritis, rheumatism and sciatica, improving the user's health and enabling him to enjoy a good night's rest.—[*D. D. N. J., F. D. C. 431; September 1942.*]

Catawba's Nervine.—W. B. Goebel, trading as Botanical Medicine Company, Kannapolis, N. C. Shipped between June 7 and 10, 1940. Composition: in each ⅛ fluid ounce not more than 3.97 grains of sodium bromide, 3.7 grains of potassium bromide and not less than 0.93 grain of ammonium bromide, whereas the respective amounts of these drugs were represented to be 4½, 4½ and ½ grain, hence adulterated. Misbranded for the same reason and because product would be dangerous to health when used according to directions on label. Further misbranded because bottle label represented product to be a safe and appropriate treatment for the conditions mentioned thereon (which were not named in the government's abstract of the case) and did not give adequate directions for taking, or warn against use by children, or in those pathologic conditions wherein it might be dangerous to health, or caution against unsafe dosage or methods or duration of administration, for protection of users.—[*D. D. N. J., F. D. C. 426; September 1942.*]

Cold Special No. 2 Red (also called Cold Special Capsules and Capsules Cold Special).—Found offered for sale at Albany Pharmacy, Southern Drug Company and National Press Pharmacy, all located in the District of Columbia. Composition: each capsule contained approximately 2 grains of acetanilid and ½ grain of quinine sulfate, with unnamed amounts of camphor, podophyllin and aloin. Misbranded because, among other things, dangerous to health when used in the dosage or with the frequency and duration prescribed in the labeling; because labeling failed to give adequate warning against use in those pathologic conditions and by children when such use might be dangerous to health, or against unsafe dosage or duration of administration, for protection of users; further, because designation "Cold Special" was false and misleading since the product did not constitute a treatment or preventive for the condition commonly known as "cold."—[*D. D. N. J., F. D. C. 432; September 1942.*]

Halomist.—Halomist, Inc., Seattle, Wash. Shipped between May 27 and June 6, 1941. Composition: essentially racemic epinephrine hydrochloride (in one specimen, 2.3 grams, in the other, 2.4 grams, per hundred cubic centimeters), chlorobutanol and water. Misbranded because dangerous to health when used in the dosage or with the frequency or duration prescribed in labeling; further misbranded because of false and misleading label claims that it would be efficacious for relieving paroxysms of bronchial asthma, treating hay fever or sinusitis, preventing asthma attacks, building up natural resistance, strength and weight, enabling user to eat what he pleased, soothing the membranes, acting as an ideal antiseptic for the sinuses, building up resistance against sinus disorders and catarrhal conditions, and toughening the tissues against infection and irritation. Also misbranded because carton did not give common or usual names of active ingredients or state quantity or proportion of chlorobutanol present, manufacturer's name and address were not prominently placed on the carton and carton did not bear an accurate statement of the quantity of contents.—[*D. D. N. J., F. D. C. 433; September 1942.*]

Happy Day Headache Powders.—Shipped Sept. 16, 1940, in part by Max Caplan, owner of the Capital Drug Company, Roanoke, Va., and in part by the Sessions Specialty Company; manufactured by Gulf Laboratories, Inc., Lafayette, La. Composition: essentially acetanilid (2½ grains per powder), aspirin, caffeine, phenolphthalein and milk sugar. Misbranded because dangerous to health when used as recommended in the labeling; also because labeling failed to give adequate directions for use and did not contain necessary warnings against employment in those pathologic conditions, or by children, when its use might be dangerous to health; also because of false labeling representations as to its efficacy for relief of discomfort arising from head colds, hay fever, nervousness, menstrual disturbances, tonsillitis, sinus trouble, headache, rheumatism, influenza and throat irritations and because label did not bear the common or usual names of the active ingredients or an accurate statement of their quantities.—[*D. D. N. J., F. D. C. 434; September 1942.*]

Hillman's D Compound.—David Hillman, trading as Hillman Pharmaceutical Company, Chicago. Shipped Feb. 5, 1940. Composition: capsules each containing aminopyrine (1.44 grains) and a small amount of ephedrine sulfate, with milk sugar, flavored with peppermint oil. Misbranded because dangerous to health when used in the dosage or with the frequency or duration prescribed, recommended or suggested in the labeling; because labeling did not bear adequate directions for use or sufficient warnings against unsafe dosage or methods or duration of administration in the manner necessary for the protection of users and because label gave the impression that the product was a safe and appropriate treatment for the conditions mentioned (dysmenorrhea and the cramps, backache and headache which accompany menstruation), whereas it was a dangerous product, and the label failed to reveal that its use might cause serious blood disturbances.—[*D. D. N. J., F. D. C. 427; September 1942.*]

Samaritan Treatment Preparations.—Suppletive Formula Number 1, Supportive Formula S.G.M.a, and Formula Number 1.—E. S. Miller Laboratories, Inc., Los Angeles. Shipped between May 3 and Oct. 17, 1940. Composition: Suppletive Formula Number 1—emetine hydrochloride; Supportive Formula S.G.M.a—essentially glandular material and water; Formula Number 1—essentially compounds of ephedrine, pilocarpine, emetine and strychnine, with sulfates, chlorides and water. Suppletive Formula Number 1 misbranded because dangerous to health when used in the dosage suggested in the labeling. This product and Formula Number 1 were misbranded because labeling failed to warn adequately against use in those pathologic conditions (or by children in the case of Formula Number 1) when their use might be dangerous to health, or against unsafe dosage or methods or duration of administration, necessary for protection of users. All three products misbranded because labeling failed to give adequate directions for use and because they were fabricated from two or more ingredients and labeling failed to give common or usual names of active ingredients.—[*D. D. N. J., F. D. C. 435; September 1942.*]

Syn-O-Scope and Synex.—Syn-O-Scope Laboratories, Los Angeles. Shipped Aug. 24, 1940. A device (Syn-O-Scope) and accompanying liquid (Synex). Composition: Synex—essentially 19.5 per cent of alcohol by volume, with camphor, eucalyptus oil and water. Syn-O-Scope misbranded because dangerous to health when used in dosage which label specified or, as label recommended, "for the application of medicaments to irritated and congested nasal passages," since these and other directions falsely represented that the product was efficacious for the purposes recommended. Device and liquid misbranded in that carton and vial containing the liquid did not bear the common or usual names of the active ingredients, including the quantity of alcohol, or the name and address of the manufacturer, packer or distributor.—[*D. D. N. J., F. D. C. 437; September 1942.*]

Wondersalve.—Brookgate Remedies Company, Evansville, Ind. Shipped Dec. 21, 1939. Composition: phenolic compounds, including carbolic acid (5.44 per cent), camphor and turpentine in an ointment base. Misbranded because of false and misleading claims on the label that it would be efficacious "for all cases of inflammation or infection. For . . . mashed members, cinders or any other foreign substances in the eye"; further misbranded because dangerous to health when used according to directions in the labeling. Also misbranded under the Federal Caustic Poison Act, as reported in Notice of Judgment 103, published under that Act.—[*D. D. N. J., F. D. C. 438; September 1942.*]

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 15-16. Sec., Council on Medical Education and Hospitals, Dr. H. G. Weiskotten, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, Jan. 16, page 213.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 15-16. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Medical.* Little Rock, June 3-4. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, June 3-4. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Los Angeles, March 8-11. Sec., Dr. C. B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT: * Hartford, March 9-10. *Endorsement.* Hartford, March 23. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Washington, May 10-11. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: * Jacksonville, June 21-22. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: March. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, April 6-8. Superintendent of Registration, Department of Registration and Education, Mr. Philip M. Harman, Springfield.

IOWA: * Iowa City, Feb. 22-24. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Kansas City, May 19-20. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, March 2-4. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, March 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical.* Baltimore, March 23-26. Sec., Dr. J. T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 15-16. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, March 9-12. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston.

MICHIGAN: * Ann Arbor and Detroit, June 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MISSOURI: St. Louis, Feb. 16-18 and March 23-25. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, April 6-7. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: *Reciprocity.* Carson City, Feb. 1. Sec., Dr. R. A. Petty, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Deering G. Smith, State House, Concord.

NEW MEXICO: * Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Bureau of Professional Examinations, Mr. H. L. Field, 315 Education Bldg., Albany.

OHIO: Columbus, March 16-19. *Endorsement.* Columbus, April 6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

UTAH: Salt Lake City, June. Dir., Department of Registration, Mr. G. V. Billings, 324 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, March 25-27. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, March 24-27. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WEST VIRGINIA: Charleston, March 1-3. Commissioner, Public Health Council, Dr. C. F. McClintic, State Capitol, Charleston.

WYOMING: Cheyenne, Feb. 1-2. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, March 10-11. Sec., Dr. E. B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: Feb. 13. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, April 19-20. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: DeLand, June 9. Sec., Dr. J. F. Conn, John B. Stetson, University, DeLand.

MICHIGAN: Ann Arbor and Detroit, Feb. 12-13. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

NEW MEXICO: Albuquerque, Feb. 1. Sec., Miss Pia Joerger, State Capitol, Santa Fe.

OKLAHOMA: Oklahoma City, May. Sec., Dr. Oscar C. Newman, Shattuck.

OREGON: Portland, Feb. 13. Sec., Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Feb. 17. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Aberdeen, June 4-5. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, April 3. Prof. Robert N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Pennsylvania July Report

The State Board of Medical Education and Licensure reports the written examination for medical licensure held at Philadelphia and Pittsburgh, July 7-9, 1942. The examination covered 5 groups and included 50 questions. An average of 75 per cent was required to pass. Four hundred and thirty-seven candidates were examined, 420 of whom passed and 17 failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists	(1941), (1942)*		2
Stanford University School of Medicine	(1942)		1
George Washington University School of Medicine	(1941, 2)		2
Georgetown University School of Medicine	(1941,9), (1941)*		10
Howard University College of Medicine	(1941, 2)		2
Rush Medical College	(1941, 2)		2
University of Chicago, The School of Medicine	(1941)		1
Louisiana State University School of Medicine	(1941)*		1
Johns Hopkins University School of Medicine	(1940), (1941, 4)		5
University of Maryland School of Medicine and College of Physicians and Surgeons	(1941, 2)		2
Harvard Medical School	(1940), (1941)		2
Tufts College Medical School	(1940)		1
University of Michigan Medical School	(1941)		1
University of Minnesota Medical School	(1935)		1
St. Louis University School of Medicine	(1941, 3)		3
Washington University School of Medicine	(1941)		1
Creighton University School of Medicine	(1941)		1
University of Nebraska College of Medicine	(1941, 2)		2
Cornell University Medical College	(1940), (1941)		2
New York University College of Medicine	(1941)		1
Syracuse University College of Medicine	(1941)		1
University of Buffalo School of Medicine	(1941)		1
University of Rochester School of Medicine and Dentistry	(1941)		1
Ohio State University College of Medicine	(1941)		1
Western Reserve University School of Medicine	(1941), (1941)*		2
University of Oregon Medical School	(1941)		1
Hahnemann Medical College and Hospital of Philadelphia	(1941, 55)		55
Jefferson Medical College of Philadelphia	(1940, 13), (1941, 57), (1941)*		71
Temple University School of Medicine	(1940, 19), (1941, 53), (1941, 2)*		74
University of Pennsylvania School of Medicine	(1938), (1940, 30), (1941, 60), (1941)*		92
University of Pittsburgh School of Medicine	(1941, 53)		53
Woman's Medical College of Pennsylvania	(1940, 2), (1941, 9)		11
Medical College of the State of South Carolina	(1941)		1
Meharry Medical College	(1941)		1
Marquette University School of Medicine	(1942)		1
University of Wisconsin Medical School	(1941)		1
University of Toronto Faculty of Medicine	(1941)		1
McGill University Faculty of Medicine	(1939), (1940), (1941)		3
Medizinische Fakultät der Universität Wien	(1934), (1935)		2
Université Libre de Bruxelles Faculté de Médecine	(1939)		1
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia	(1937), (1938)		2
Regia Università di Napoli Facoltà di Medicina e Chirurgia	(1938)		1

School	FAILED	Year Grad.	Number Failed
University of Oklahoma School of Medicine	(1941)		1
Hahnemann Medical College and Hospital of Philadelphia	(1941, 7)		7
University of Pennsylvania School of Medicine	(1941)		1
University of Pittsburgh School of Medicine	(1941)		1
Medizinische Fakultät der Universität Wien	(1923), (1924), (1926), (1930)		4
Christian-Albrechts-Universität Medizinische Fakultät, Kiel	(1913)		1
Ludwig-Maximilians-Universität Medizinische Fakultät, München	(1939)		1
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest	(1936)		1

Twenty-five physicians were licensed to practice medicine by reciprocity and 12 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners from Feb. 19 through Aug. 26, 1942. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine	(1925)		Michigan, (1928) N. Carolina
Loyola University School of Medicine	(1928)		California
University of Illinois College of Medicine	(1925)		Indiana
State University of Iowa College of Medicine	(1923)		Iowa
Tulane University of Louisiana School of Medicine	(1940)		Mass.
Johns Hopkins University School of Medicine	(1920)		Virginia, (1921) Ohio
Harvard Medical School	(1921)		Connecticut, (1924) Georgia, (1934) New York
Tufts College Medical School	(1937)		Connecticut
University of Minnesota Medical School	(1928)		Montana
Washington University School of Medicine	(1901)		New York
Columbia University College of Physicians and Surgeons	(1901), (1940)		New York
Cornell University Medical College	(1939)		New York
New York Homeopathic Medical College and Flower Hospital	(1934)		New York

University of Buffalo School of Medicine	(1931)	New York
Ohio State University College of Medicine	(1932)	Ohio
Hahnemann Medical College and Hospital of Philadelphia	(1936)	Delaware
Woman's Medical College of Pennsylvania	(1922)	New York
University of Tennessee College of Medicine	(1936)	Florida
University of Virginia Department of Medicine	(1939)	Virginia
University of Wisconsin Medical School	(1932)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.
George Washington University School of Medicine		(1928)
Georgetown University School of Medicine		(1939)
Howard University College of Medicine		(1940)
Cornell University Medical College		(1941)
University of Buffalo School of Medicine		(1941)
Duke University School of Medicine		(1941)
Western Reserve University School of Medicine		(1923)
Temple University School of Medicine		(1940, 2)
University of Pennsylvania School of Medicine		(1919), (1920), (1941)

* Licenses have not been issued.

Oregon Reciprocity Report

The Oregon State Board of Medical Examiners reports 6 physicians licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners on Oct. 23, 1942. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Minnesota Medical School		(1938)	Minnesota
University of Nebraska College of Medicine		(1925)	Nebraska
Cleveland Homeopathic Medical College		(1904)	California
University of Oregon Medical School		(1941)	California
Osteopaths *			New Mexico, New Mexico

School	LICENSED BY ENDORSEMENT	Year Grad.
College of Medical Evangelists		(1939)
Cornell University Medical College	*	(1937)

* Licensed to practice surgery only.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Sale of Asthmanol by Layman.—An information was filed against the defendant, charging, in part, that he did unlawfully practice the healing art by "examining, treating, and prescribing for one Mamie L. Murphy, without having first obtained a license so to do from the Commission on Licensure for the District of Columbia against the form of the statute in such case made and provided, . . ." From a conviction in the police court, where it was conceded that the defendant did not have a license to practice, the defendant appealed to the United States Court of Appeals for the District of Columbia.

For about eighteen years the defendant had been manufacturing an asthma remedy called "asthmanol," which he sold for $10 a bottle. In connection with the sale of "asthmanol" the defendant made certain recommendations concerning the general health of the purchasers, and when they were suffering acutely from asthma and needed special care the defendant had facilities in his home to render it. The evidence showed that a Mrs. Murphy consulted the defendant and told him that she had asthma and heart trouble. The defendant gave her some little pink pills and she arranged with him to return to his home the next week and to stay for a period of three weeks for treatments. The defendant told Mrs. Murphy that he would cure her and that the price would be $100. Mrs. Murphy returned at the appointed time and the defendant gave her more pills. She was then put to bed in a rear bedroom, which was occupied by other "patients." She was put on a diet and the defendant gave her pills and "asthmanol" when he thought it necessary. Some of the pills administered by the defendant contained pure salts, cascara and capsicum, and others contained sodium bicarbonate. The "asthmanol" consisted largely of whisky and contained also a small amount of gentian. Mrs. Murphy and the other patients all called the defendant "doctor."

The defendant first contended that the information was insufficient because it failed to allege that the defendant practiced "for a fee, gift or reward, or in anticipation of a fee, gift or reward, whether tangible or intangible." The degree of particularity required in the averments of an information, the court said, is that which is necessary to enable the accused to understand the nature of the charge against him, intelligently to meet it and to plead the result, whether conviction or acquittal, as his protection against another prosecution for the same offense. The averments must be sufficient to inform the court of the facts alleged so that it may decide whether they are sufficient in law to support a conviction and that the offense may judicially appear to the court when it pronounces judgment. The court was satisfied that in the present case the information conformed to the rule.

The defendant introduced the testimony of two physicians, referred to in the decision of the court as Dr. Dull and Dr. Butz. One of them stated that he had diagnosed Mrs. Murphy's condition as bronchial asthma and that in his opinion the acts done by the defendant amounted to nothing more than ordinary nursing services and did not constitute the practice of medicine. The other said that Mrs. Murphy was a former patient of his, that he had told her about the defendant and had given her the defendant's address but that she had gone to the defendant's house of her own volition. He, too, testified that in his opinion the things done by the defendant were only the usual functions of a nurse and that it was going too far to say that the defendant was practicing medicine in the ordinary sense of that term.

The defendant argued that the healing arts practice act exempted the manufacture and sale of medicines as well as "nursing" and said that everything done by him beyond the selling of his medicine constituted no more than nursing. He further contended that the act expressly exempted the use of ordinary hygienic, dietetic or domestic remedies and that the remedies which he applied in this case were domestic remedies. It is true, said the court, that people frequently administer remedies to themselves in their own homes; it is true that nurses, acting under the instruction of doctors, sometimes perform duties which doctors themselves would otherwise perform and which, otherwise, would come clearly within the scope of the practice of medicine. But neither people in the privacy of their own homes nor nurses acting under the instruction of physicians represent to persons who are otherwise strangers to them that they will cure them of disorders for a price specified, as was done in this case. The defendant's activities, the court thought, brought him clearly within the proscription of the act. The definition of "the healing art" set out in the act is made up of a series of clauses stated disjunctively. Proof of any one would be sufficient to establish the practice which is contemplated by the act. That the defendant did in the present case at least attempt "to prevent, relieve, correct, or cure any disease," concluded the court, cannot be seriously questioned. The judgment of conviction was affirmed.—*Powers v. United States, 128 F. (2d) 300 (1942).*

Society Proceedings

COMING MEETINGS

Annual Congress on Medical Education and Licensure, Chicago, Feb. 15-16. Dr. H. G. Weiskotten, 535 North Dearborn St., Secretary.

American Society of Anesthetists, New York, Feb. 4. Dr. Paul M. Wood, 745 Fifth Avenue, New York, Secretary.

Southern Section, American Laryngological, Rhinological and Otological Society, Chattanooga, Tenn., Jan. 28. Dr. Francis B. Blackmar, 1301 Broadway, Columbus, Ohio, Chairman.

Western Section, American Laryngological, Rhinological and Otological Society, Portland, Ore., Jan. 31. Dr. Irving M. Lupton, 1020 S.W. Taylor St., Portland, Ore., Chairman.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

12:129-160 (Nov.) 1942

Electroshock Treatment in Psychiatric Disorders. F. A. Kay, J. D. Smith and N. H. Reim, Tuscaloosa.—p. 129.

Practical Factors in Spinal Anesthesia. E. M. Chenault, Decatur. —p. 132.

Intravenous Alcohol in Postoperative Analgesia. F. H. Craddock Jr. and F. H. Craddock Sr., Sylacauga.—p. 134.

Value of Cystoscopies in Female Urology: Preliminary Report on Use of Intracaine as Topical Analgesic. G. F. Douglas, Birmingham.—p. 137.

Fracture of Upper Humerus: Advances in Treatment. F. W. Pickell, Baton Rouge, La.—p. 145.

American Journal of Diseases of Children, Chicago

64:771-962 (Nov.) 1942

Dental Development in Congenital Syphilis. B. G. Sarnat and N. G. Shaw, Chicago.—p. 771.

Studies on Blood Phosphorus: III. Intracellular Blood Phosphorus in Anemia in Children and in Experimental Anemia. H. Behrendt, New York.—p. 789.

Incidence of Pinworn Infection in White and in Negro Hospitalized Children. Eugenia Cuvillier Jones, Atlanta, Ga.—p. 803.

*Dietary Ratios for Child with Diabetes Mellitus. R. L. Jackson and Juanita Kenefick, Iowa City.—p. 807.

Isolation of Virus from Patient with Fatal Encephalitis Complicating Measles. M. F. Shaffer, G. Rake, New Brunswick, N. J., and H. L. Hodes, Baltimore.—p. 815.

Encephalographic Ratio for Estimating Size of Cerebral Ventricles: Further Experience with Serial Observations. W. A. Evans Jr., Detroit.—p. 820.

Osteochondrosis Deformans Tibiae: Nonrachitic Bow Leg in Children. C. G. Barber, Cleveland.—p. 831.

Adjustment of Blood Oxygen Levels in Neonatal Life. C. A. Smith, Boston, and E. Kaplan, New York.—p. 843.

Congenital Malformations Induced in Rats by Maternal Nutritional Deficiency: II. Use of Varied Diets and of Different Strains of Rats. J. Warkany, Rose C. Nelson and Elizabeth Schraffenberger, Cincinnati.—p. 860.

Vitamin D and Fluorine: Synergistic Relationship? B. R. East, New York.—p. 867.

Congenital Atresia and Stenosis of Great Cardiac Vessels: Aortic Atresia; Pulmonary Stenosis. J. I. Rossman, Chicago.—p. 872.

Nutritional Requirements in Infancy and in Childhood. A. M. Butler, Boston.—p. 898.

Dietary Ratios in Diabetes.—Jackson and Kenefick used 4 children with diabetes mellitus of recent onset as subjects after their exogenous insulin requirement under controlled conditions was definitely established. Each child received their standard diet designed to meet all the known nutritional requirements. The diets were based on a unit formula of 7 Gm. of protein, 15 Gm. of carbohydrate and 11 Gm. of fat, with a fatty acid : dextrose ratio of 1 : 1.5. The food was given in three meals. This dietary regimen was then changed for approximately one week to a diet of high carbohydrate content and then for about the same time to a diet of high fat content. Each diet had the same caloric value and was always adequate as to nutritional requirements. Two times a week a series of blood sugar analyses was made for each subject. No difference in the utilization of any of the three diets was noticed. The insulin requirement remained constant, and the blood sugar fluctuations approximated the normal range in each study. The high carbohydrate meals were absorbed more rapidly, resulting in slightly higher postprandial blood sugar values. Sugar was not excreted in the urine. On the high carbohydrate diet the 10 p. m. blood sugar values were slightly higher than the 11 a. m. values, but this was probably because the children retired at 7 p. m. and hence had less exercise after the evening meal than in the morning. The close range of the blood sugar values during fasting implied that the carbohydrate metabolism of these stabilized patients with diabetes mellitus was comparable to that of normal persons. The basic nutritional requirements of the child with diabetes mellitus should not differ from those of the child who does not require exogenous insulin.

American Journal of Hygiene, Baltimore

36:243-376 (Nov.) 1942

*Carbon Disulfide in Control of Sylvatic Plague Vectors. M. A. Stewart, Berkeley, Calif.—p. 243.

Quantitative Studies of Symptomatology of Poliomyelitis in Macaca Mulatta. F. J. Moore, J. F. Kessel, A. Hoyt and E. Fisher, Los Angeles.—p. 247.

Analysis of Serologic Reactions After Vaccination and Infection with Virus of Influenza A. M. D. Eaton and W. P. Martin, Berkeley, Calif.—p. 255.

Effect of Ultraviolet Irradiation on Trichinella Spiralis. D. Stowens, New York.—p. 264.

Consideration of Mechanism of Death in Acute Plasmodium Falciparum Infection: Report of Case. R. H. Rigdon, Memphis, Tenn.—p. 269.

Antimalarial Effect of Acranil in Birds. W. D. Gingrich and R. S. Fillmore, Galveston, Texas.—p. 276.

Diphtheria Immunization: Interpretation of Schick Test. J. J. Phair, Baltimore.—p. 283.

Study of Antigenic Properties of Hemophilus Pertussis and Related Organisms: II. Protection Tests in Mice. Grace Eldering, Baltimore.—p. 294.

Factors Affecting Retention and Rate of Removal of Bacteria from Tracheal Tree and Lungs. L. J. Cralley, Iowa City.—p. 303.

Skin Tests in Schistosomiasis with Antigen from Pneumoneces Mediolexus. J. T. Culbertson and H. M. Rose, New York.—p. 311.

Quantitative Method for Determining Bacterial Count on Restaurant Glassware. M. Novak and Anna Margaret Lacy, Chicago.—p. 316.

Fluctuation in Numbers of Cysts of Endameba Histolytica and Endameba Coli in Stools of Rhesus Monkeys. D. R. Lincicome, Lexington, Ky. —p. 321.

Behavior of Influenza A Virus in Rabbit, Rat and Guinea Pig. R. A. Hyde, Baltimore.—p. 338.

Typhoid Vaccine Studies: V. Studies on Relationship Between Antigenic Content and Immunogenic Properties of Bacterial Suspensions. G. F. Luippold, Washington, D. C.—p. 354.

Observations on Untreated Infections with Plasmodium Lophurae in 1,200 Young White Pekin Ducks. R. I. Hewitt, A. P. Richardson, Memphis, Tenn., and L. D. Seager, Wilson Dam, Ala.—p. 362.

Control of Sylvatic Plague.—Stewart points out that all mammals (ground squirrels, mice and skunks) in ground squirrel burrow systems fumigated with 2, 3 and 4 ounces (60, 90 and 120 cc.) of carbon disulfide per burrow opening were found dead. However, the effect on the adult fleas, both in the nests and on the dead hosts, was not lethal. Methyl bromide should be employed when sylvatic plague is known to exist in the rodents. This is necessary because there is no assurance that the burrow openings which were closed during fumigation will not be reopened by migrating mammals before the surviving fleas die of starvation. This would permit the escape of infective fleas searching for a blood meal. The employment of methyl bromide as a fumigant for fleas and ground squirrels in plague suppression is particularly important where military personnel are quartered and especially when they maneuver in areas containing infected rodents.

American J. Obstetrics and Gynecology, St. Louis

44:743-924 (Nov.) 1942

Studies on Head Molding During Labor. H. C. Moloy, New York. —p. 762.

Classification of Obstetric Pelvis Based on Size, Mensuration and Morphology. K. B. Steele and C. T. Javert, New York.—p. 783.

*Observations of Development of Pelvic Conformation. D. G. Morton, San Francisco.—p. 799.

Solution of Posterior Pituitary Sulfonate (Pit-Sulfonate) in Labor. W. J. Dieckmann and M. S. Kharasch, Chicago.—p. 820.

Intestinal Injuries Resulting from Irradiation Treatment of Uterine Carcinoma. A. H. Aldridge, New York.—p. 833.

Hormone Influences on Ureter. J. M. Hundley Jr., W. K. Diehl and E. S. Diggs, Baltimore.—p. 858.

Surgical Treatment of Postoperative Care of Vesicovaginal Fistula. N. F. Miller. Ann Arbor, Mich.—p. 873.

Partial Colpocleisis as Approach to Vesicovaginal Fistula Following Total Hysterectomy. F. C. Holden, New York.—p. 880.

*Morphine Sulfate as Obstetric Analgesic: Clinical Analysis. W. F. Mengert, Iowa City.—p. 888.

Gynecologic and Other Implications Which Relate to the Aging Female Population. G. W. Kosmak, New York.—p. 897.

Development of Pelvic Conformation.—Morton discusses the evolution of the shape of the female pelvic inlet and the development of the sexual differences in bony pelves. He examined 10 fetal female and 17 male pelves varying in age

from 3½ to 10 months, and the pelves of 98 girls and 45 boys varying in age from 3 to 18 years. He found the shape of the inlet to be broader than it was long at all periods of fetal life. There were no significant sexual differences. In children less than 6 the inlet was still either broader than long or round in most instances. From 6 to 11 the pelvic inlet was invariably longer than broad. Before puberty the outline showed an inward bowing in the acetabular regions, presumably resulting from the upward thrust of the femurs. After puberty the pelvic inlet of the female pelves tended to flatten, so that many again became broader than long. No significant sexual differences were observed in the fetal period. In the years before puberty a comparison of the roentgenograms of male and female pelves revealed in male pelves a shorter posterior segment at the pelvic inlet and a downward angulation of the sacrum. The well known characteristics of adult male and female pelves were observed after puberty. A common type of pelvis up to puberty suggests that sex hormones play a large role in its development. Hereditary, nutritional and possibly other as yet unknown factors may also play a role.

Morphine Sulfate as Obstetric Analgesic.—The reports of clinically normal babies being born after large doses of morphine had been administered to their mothers prompted Mengert to inquire into the actual and potential dangers of using it as an obstetric analgesic. A total of 564 women received morphine alone or in combination with some other analgesic drug. A comparison of 727 women receiving no analgesia, of those with morphine alone or in combination and of the 243 given all other analgesic drugs indicates that morphine, alone and in combination, was associated with the highest percentage of respiratory and circulatory difficulties at birth and of fetal death. Also low forceps operations were three times higher among these patients than among those receiving other analgesics and nine times greater than in the control group. After certain standard exclusions (extraneous factors other than the analgesic) were made the discrepancies for no analgesia, morphine alone and sodium pentobarbital alone were not so large. Nevertheless, morphine still appeared to be attended with considerable respiratory embarrassment, some interference with breast feeding, too many fetal deaths and too many low forceps operations. The factors which combine to determine the effect of the drug on the newborn infant are the time of its administration in relation to delivery, the trauma of labor, the size of the dose, the anesthetic and accessory drugs. Its administration during the second and third hours preceding delivery should be avoided. There is no good reason to discontinue its use completely as an analgesic in normal labor, but its limitations must be recognized.

American Journal of Ophthalmology, Cincinnati

25:1277-1408 (Nov.) 1942

Some Observations and Experimental Studies on Physiology of Ciliary Muscle. E. Sachs, Detroit.—p. 1277.
*Sulfadiazine Iontophoresis in Pyocyaneus Infection of Rabbit Cornea. L. von Sallmann, New York.—p. 1292.
Aqueous Veins: II. Local Pharmacologic Effects on Aqueous Veins. III. Glaucoma and Aqueous Veins. K. W. Ascher, Cincinnati.—p. 1301.
Fusion, Projection and Stereopsis. I. Franklin, Milwaukee.—p. 1316.
Primary Sarcoma of Choroid: Report of Case. A. Barlow, Philadelphia.—p. 1337.
Anatomic Factors That Influence Depth of Anterior Chamber; Their Significance. H. S. Sugar, Vancouver, Wash.—p. 1341.
Use of Pseudoisochromatic Charts in Detecting Central Scotomas Due to Lesions in Conducting Pathways. Louise L. Sloan, Baltimore.—p. 1352.
Evaluation of Ultraviolet Light in Ophthalmologic Diagnosis. J. B. Feldman, Philadelphia.—p. 1357.
White Rings in Cornea (Coats). J. Waldman, Philadelphia.—p. 1362.

Sulfadiazine Iontophoresis.—Experiments with sulfapyridine, sulfacetamide and sulfadiazine iontophoresis were carried out by Sallmann on rabbits under general anesthesia. Greater amounts of sulfadiazine than of the other drugs entered the eye by iontophoresis. The drug remained in the anterior parts of the eye for four hours in a bacteriostatic concentration. When there was an ulcer or an abrasion of the cornea, a still greater amount was found. The results of sodium sulfadiazine in pyocyaneus infection of the rabbit cornea were superior to those obtained with other local or general methods of treatment. The results were still more favorable when iontophoresis was combined with sulfadiazine orally and when treatment was initiated within eighteen hours of the inoculation of pyocyaneus. The most favorable treatment twenty-four to thirty hours after inoculation was sodium sulfadiazine iontophoretically and sulfadiazine powder locally and orally. The experimental results of this therapy of advanced pyocyaneus ulcers of the cornea have been confirmed clinically in 2 cases.

American Journal of Public Health, New York

32:1209-1318 (Nov.) 1942

Health Education in Extracantonment Zones. Lucy S. Morgan, Bethesda, Md.—p. 1209.
Pulmonary Tuberculosis Resulting from Extrafamilial Contacts. C. W. Twinam, Lakeville, Mass., and A. S. Pope, Boston.—p. 1215.
New York State Mutual Aid Plan for Water Service. E. Devendorf, Albany, N. Y.—p. 1219.
False Positive Phosphatase Test from Thermophil in Pasteurized Milk. T. C. Buck Jr., Baltimore.—p. 1224.
Method for Determining Number of Beds Required for Convalescent Care of Rheumatic Infections. Bernice G. Wedum and A. G. Wedum, Cincinnati.—p. 1237.
Some Epidemiologic Aspects of Tooth Decay. B. R. East, New York.—p. 1242.
Syphilis Control in State Prison: III. Centralized Syphilis Control Program for State Prisons of New York. I. J. Brightman and B. L. Kaplan, New York.—p. 1251.
Efficacy of Standard Purification Methods in Removing Poliomyelitis Virus from Water. H. J. Carlson, G. M. Ridenour and C. F. McKhann, Ann Arbor, Mich.—p. 1256.
Improvement of Local Housing Regulation Under the Law: Exploration of Essential Principles. Subcommittee on Housing Regulations.—p. 1263.

American Journal of Surgery, New York

58:157-312 (Nov.) 1942

Conditions of Biliary Tract Requiring Urgent Surgery. F. Glenn, New York.—p. 160.
Treatment of Burns for Medical Defense Unit, with Reference to Early and Late Therapy. K. M. Marcks, Emaus, Pa.—p. 174.
Diets in General Surgery. K. B. Lawrence and Genevieve S. Connick, Boston.—p. 181.
Fundamentals in Gastrointestinal Surgical Technic: Observations in Experimental Surgical Laboratory. H. C. Saltzstein and H. M. Podolsky, Detroit.—p. 192.
Anesthesia During Subtotal Gastrectomy. M. L. Phelps, J. W. Hinton and E. A. Rovenstine, New York.—p. 198.
Gastric Resection with De Petz Mechanism. M. L. Weinstein and E. L. Adams, Chicago.—p. 202.
Combination of Local and General Anesthesia in Obstetrics. S. S. Rosenfeld, New York.—p. 207.
Postoperative Vesicovaginal Fistulas: Genesis and Therapy. W. Latzko, New York.—p. 211.
*Sterility of American Made Surgical Catgut Sutures: Twelve Year Study. R. O. Clock, Brooklyn.—p. 229.
*Immediate Covering of Denuded Area of Skull. G. M. Dorrance and J. W. Bransfield, Philadelphia.—p. 236.
New Method of Valvular Gastrostomy. M. E. Steinberg, Portland, Ore.—p. 240.
Acromioclavicular Dislocation Fixed by Vitallium Screw Through Joint. G. T. Tyler Jr., Greenville, S. C.—p. 245.

Sterility of Sutures.—From his twelve year survey of the status of the sterility of fourteen American made surgical catgut sutures, comprising 1,381 lots and 17,386 sutures, Clock found that only five brands (the products of five different manufacturers) were uniformly and continuously sterile every year. The first seven years of the study revealed that certain sutures were subjected to entirely inadequate heat or none was used for sterilizing them, reliance having been placed on chemical methods of sterilization. Since then much improvement has occurred by the adoption of an improved bacteriologic method that the author has perfected and that has been accepted by workers everywhere and has been adopted with certain additional procedures and modifications by the United States Pharmacopeia XI as the standard technic for "Tests for the Sterility of Solids," which test is now enforced by the Federal Food and Drug Administration.

Immediate Covering of Denuded Skull.—Dorrance and Bransfield suggest that whenever the pericranium of the skull is removed surgically or by trauma the defect should be covered immediately with a full thickness pedicle flap of adjacent scalp. The pedicle flap is raised from the pericranium but does not include it. The defect created by the pedicle flap has pericranium for its base and may be covered by a free graft from the abdomen or thigh.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

26:661-818 (Nov.) 1942

Individual Support in Unified Wartime Venereal Disease Control Program. R. A. Vonderlehr, Washington, D. C.—p. 661.

Further Observations on Trisodarsen for Treatment of Syphilis: Résumé of Eight Years' Experience. H. Beerman, H. Pariser, Philadelphia, and J. H. Gordon, Washington, D. C.—p. 670.

Modification of Marquez Test for Syphilis. C. R. Rein and Clarise E. Hazay, New York.—p. 681.

Value of Cystoscopic Session in Male Gonorrhea Dispensary. H. M. Spence and E. W. Featherston, Dallas, Texas.—p. 685.

Gonococcus and Gonococcic Infections: Report of Committee on Surgery of Research of American Neisserian Medical Society. Ruth Boring Thomas, Dover-Foxcroft, Maine.—p. 691.

American Review of Tuberculosis, New York

46:475-586 (Nov.) 1942

*Management of Patients with Occasionally Positive Sputum After Apparently Adequate Therapy: Clinical Aspects. A. M. Stokes, Oneonta, N. Y.—p. 475.

Id.: Pathologic Aspects. H. S. Willis, Northville, Mich.—p. 479.

Id.: Nursing Aspects. Esta H. McNett, Cleveland.—p. 481.

Id.: Public Health Aspects. K. M. Soderstrom, Seattle.—p. 483.

Medical Aspects of Rehabilitation of Tuberculosis: Experience of a Quarter Century with 964 Patients at Altro Work Shops. L. E. Siltzbach, New York.—p. 489.

Chronic Pulmonary Tuberculosis: Clinical and Roentgenologic Observations over Ten Year Period Without Collapse Therapy. H. R. Nayer and M. Pinner, New York.—p. 505.

Bronchial Obstruction and Pulmonary Atelectasis as Seen in Childhood Tuberculosis with Secondary Bronchiectasis as Sequela. E. M. Kent, St. Louis.—p. 524.

*Tuberculin Sensitivity in Children with Bone Tuberculosis. P. J. Howard, J. A. Johnston and C. L. Mitchell, Detroit.—p. 532.

Hastings on Catheter Drainage of Tuberculous Cavities. J. H. Elliott, Toronto, Ontario, Canada.—p. 546.

*Survival of Tubercle Bacilli in Books: How Contaminated Books May Be Rendered Noninfectious. C. R. Smith, Los Angeles.—p. 549.

Mediums for Tubercle Bacilli: Evaluation of Different Mediums for Diagnostic Cultures of Tubercle Bacilli. H. J. Corper and M. L. Cohn, Denver.—p. 560.

Silicon Dioxide in Guinea Pig Inoculation for Tuberculosis. Harriett Hollon, Marian Sprick, Elizabeth Conroy and Elizabeth Wilson, Powers, Mich.—p. 568.

Occasionally Positive Sputum.—The management of the patient whose sputum after adequate therapy is occasionally positive and a complete clinical reappraisal reveals no obvious source of the bacilli, Stokes says, will largely depend on economics. In arriving at an equitable decision as to what patients shall be isolated and what ones are to return to their former environment the type, age and extent of the pulmonary lesion, the age, sex and resistance of the patient, his intellectual and economic status, his economic usefulness, his personal, family and civic responsibilities and finally his vocation must be considered. The presence of any bacilli in the sputum of patients less than 25 is of serious import and almost always indicates the necessity for further active treatment. The careless patient and sanatorium "repeater" must be permanently isolated. The actual dollar cost of this may well be less than caring for secondary contact cases. The patient whose disease is healed by extensive fibrosis which reduces his pulmonary reserve to the point that he is a permanent respiratory cripple and who can never be rehabilitated must also remain under custodial care. Rarely it may be necessary to extirpate surgically a focus that may be shedding occasional tubercle bacilli, notably the post-tuberculous bronchiectasis. However, the management of these patients cannot stop here. The physician has a moral obligation to see that treatment remains constantly adequate. The contacts of these patients should have roentgenograms of the chest taken periodically. Never should these patients be allowed to engage in occupations that require the handling of children or food.

Tuberculin Test in Bone Tuberculosis.—Howard and his associates carried out the tuberculin test for ten years on 19 children with bone tuberculosis. The initial threshold reactions of 4 children at the start of the involvement were 0.1 to 0.01 mg. of old tuberculin. These levels subsequently rose to 0.000 1 to 0.000 000 1 mg. and then receded again to levels of 0.01 and 0.001 mg. with the healing of the process. The sensitivity of a group of 7 children followed the same rise and fall, but these children did not appear for treatment at the start of bone involvement. The allergy pattern of 5 children showed a high plateau of sensitivity for from three to six years, associated with a poor healing ability and the death of 1 patient from constant spread of the tuberculous infection. All children showed a positive test at the start of infection; 1 four months before bone destruction could be seen on the roentgenogram. It is concluded that a rise to a high level of sensitivity with a subsequent fall is characteristic of the evolution of the healing process in bone tuberculosis and that sustained high levels of allergy have characterized lesions which have failed to heal.

Survival of Tubercle Bacilli in Books.—To determine whether books and magazines handled by sputum positive patients are infectious, Smith smeared artificially or naturally positive sputum in 0.05 cc. amounts on 1 inch squares cut in but not removed from the leaves of books, magazines or stacks of paper. The books were immediately closed while the pages were still wet and stored in a dark cupboard in an unheated room. At intervals these paper squares were removed with sterile forceps and shaken by machine with a weak alkaline solution to recover the tubercle bacilli for culture and guinea pig inoculation. The tubercle bacilli remained alive for two weeks to three and a half months. They were not recoverable at from three weeks to five months. In general, they lived about as long on paper as on glass. They lived as long on printed as on blank paper. The period of recoverability was longer when the dose was large and was deposited during the winter season when average temperature and relative humidity were lowest. Occasional uncovered coughing into books is fairly common among sanatorium patients. Thumb wetting occurs but is infrequent. Therefore books and magazines used by sputum positive patients are possible sources of infection. They should not be read by nontuberculous persons. Contaminated books ought to be rendered safe and noninfectious in most cases by a quarantine period of one month.

Anesthesiology, New York

3:611-730 (Nov.) 1942

*Shock. H. D. Green, Cleveland.—p. 611.

Technics of Spinal Anesthesia. L. F. Schuhmacher Jr. and U. H. Eversole, Boston.—p. 630.

Response of Digitalized Heart to Cyclopropane and Epinephrine. J. W. Stutzman, C. R. Allen and W. J. Meek, Madison, Wis.—p. 644.

Development of Anesthesia (continued). T. E. Keys, Rochester, Minn. —p. 650.

*Insulin Shock During Sodium Pentothal and Cyclopropane Anesthesia. E. M. Papper, M. Stern, E. Bueding and E. A. Rovenstine, New York. —p. 660.

Intractable Pain. W. Bates and B. D. Judovich, Philadelphia.—p. 663.

Essential Characteristics of Local Anesthetics. R. Beutner and B. Calesnick, with assistance of L. Lapinsohn, Philadelphia.—p. 673.

Shock.—Shock is initiated by any factor that causes an acute but persistent diminution of the minute volume of the circulation. This reduction may be of cardiac origin, due to loss of plasma externally, due to a primary combined diminution of blood volume from increased capillary permeability and/or an increase of the capacity of the circulation caused by dilatation of capillaries and venules. With the latter a change in the chemical or physical character of the blood may also impair the general circulation. When the diminished circulation throughout the body of itself increases permeability and dilatation of the capillaries and venules it augments the already impaired capillary function. When this begins to occur, true shock is said to be present. In part at least, by direct effects on the capillaries such substances as anesthetics, heparin, dyes, toxins and other chemical agents in excessive quantities may also contribute to or even induce shock. Most of the symptoms of shock are explainable on the basis of the depression of the circulation and the associated depression of the functions of the body. Because shock tends to perpetuate itself once the minute volume of circulation has become sufficiently decreased, it is most important to prevent the initiating factors and to restore the blood volume before the vicious cycle is firmly established and before irreversible damage occurs in the various tissues of the body. Green is convinced that it is better to give fluid, preferably blood, during an operation, even though it is continuously lost by unavoidable hemorrhage, than to allow the blood pressure to become dangerously low and then to attempt to restore the fluid loss after the operation is completed. The term shock for

this condition is unfortunate as it implies something sudden, whereas shock appears to be a relatively slowly developing progressive condition, for which an apt term would be acute progressive circulatory failure.

Insulin Shock During Sodium Pentothal Anesthesia.—The management of the anesthesia of a diabetic patient undergoing surgical intervention includes the administration of insulin, saline solution and dextrose, preoperatively and postoperatively. During anesthesia the symptoms (nervousness, tremor, anxiety, irritability and convulsions or coma) of insulin shock are not present in the anesthetized patient. To establish criteria whereby insulin shock during anesthesia could be recognized, Papper and his colleagues studied the insulin shock in 3 volunteer normal men aged 25 to 32. They were admitted in an acute alcoholic episode but were clear mentally, were cooperative and were not nutritionally deficient. Insulin shock was induced during cyclopropane anesthesia and during pentothal sodium anesthesia by an initial intravenous injection of 30 units of insulin and 20 units for three doses every half hour. The first injection was given after a dextrose tolerance test during anesthesia, that is, two and a half hours after the intravenous administration of 100 Gm. of dextrose. Experiments were conducted seven days apart in the postabsorptive state. Anesthesia was maintained in the surgical second plane. Premedicant drugs were not used. The first evidence of insulin shock was moderately profuse perspiration one hour after the first dose of insulin during pentothal sodium anesthesia; with cyclopropane profuse perspiration occurred one and a half hours after the first dose of insulin. The perspiration was followed in twenty minutes by an increased pulse pressure (due almost entirely to a fall in diastolic blood pressure), a slight tachycardia and a full bounding pulse of the Corrigan type. These manifestations of insulin shock were the same with the two agents except that the latent period was longer with cyclopropane. The administration of dextrose intravenously reverses the changes immediately. The rise in pyruvic acid levels during pentothal anesthesia was decided, whereas with cyclopropane if they changed they were decreased. Cyclopropane, while affecting the fasting blood sugar level little, caused definite changes in the dextrose tolerance curve with a diabetoid type of reaction. This impairment was less definite with pentothal anesthesia.

Annals of Internal Medicine, Lancaster, Pa.

17:775-890 (Nov.) 1942

*Electrocoma Therapy of Psychoses. J. L. Fetterman, Cleveland.—p. 775.
*Chronic Constrictive Pericarditis: Follow-Up Study of Thirty-Seven Cases. M. B. Harrison and P. D. White, Boston.—p. 790.
*Surgical Treatment of Hypertension (Results in Fifty-Four Cases). E. C. Bartels, J. L. Poppen and R. L. Richards, Boston.—p. 807.
*Physiologically Directed Therapy in Pneumonia. A. L. Barach, New York.—p. 812.
Oxygen Mask Metered for Positive Pressure. A. L. Barach and N. Molomut, New York.—p. 820.
Functional Mitral Stenosis. M. Robinow and H. T. Harper Jr., Augusta, Ga.—p. 823.
Association of Atrophic Gastritis with Hypothyroidism: Preliminary Report of Eleven Cases. F. C. Golding, Denver.—p. 828.
Parenteral Use of Sulfonamides: Clinical and Experimental Study. L. T. Hall, E. Thompson, R. J. Wyrens, A. M. Harris and Violet Wilder, Omaha.—p. 835.
Painful Feet. J. J. Nutt, New York.—p. 842.
Comparative Value of Calcium Gluconate, Magnesium Sulfate and Alpha Lobeline Hydrochloride as Agents for Measurement of Arm to Tongue Circulation Time in Fifty Patients With and Fifty Patients Without Heart Failure. H. H. Hussey, D. P. Cyr and S. Katz, Washington, D. C.—p. 849.

Electrocoma Therapy of Psychoses.—The clinical results of electro shock therapy in 70 patients with various mental disorders are recorded by Fetterman, who offers some interpretation of the results obtained in the light of the modern concept of psychoses. Although the clinical results of the therapy have been extremely satisfactory, certain disturbing but usually temporary reactions occur. They are decided amnesia, periods of elation and states of confusion. In addition to these psychologic side actions, which are temporary, certain complications, possibly of a more permanent nature, of electro shock therapy may be divided into immediate reactions and possible later sequelae. The immediate complications are chiefly the injuries to the muscular and bony systems, and the possible late sequelae are cerebral, which Cerletti and Kalinowsky believe are reversible and do not produce serious damage. The most significant clinical observation is the high rate of improvement and the willingness of the patients to take this treatment. A course of electrocoma treatment influences the mood of the patient first. There is a tendency for the saddened patient to become more cheerful. In patients who are troubled by serious hallucinations and delusions this improvement in mood pushes into the background the hallucinatory experiences, which are later ultimately lost. Recovery in mental function requires the accumulated benefits from a series of treatments. Previous mental clouding with decided forgetfulness or confusion does not interfere with recovery. Recovery is obscured by the clouding, but despite this delay the clouding lifts and the goal is reached. The treatment achieves its success through direct electrical or chemical alteration in cerebral functions. The therapeutic effect is not attained through fear; patients do not emphasize any terror reaction as they do with metrazol. Recovery is highest in depressed patients, there is improvement in many with schizophrenia, and there is a tendency toward improvement in manic states. During treatment there is a change in the patient's direction of interest and thought. He tends to look outward, to notice external stimuli and to interpret them in line with reality. Recovery is thus not so much a gain in total cerebral function as an improvement in the direction of thought. On the basis of these observations, Fetterman makes the following conjectures: The brain is the seat of or the major link of all psychoses, which are caused by disturbances in cerebral function and are believed to be organic, even if the disorder cannot be established microscopically. The mechanism of recovery depends on an electrochemical change in cerebral cells. Each treatment appears to damage the function of either cortical cells or association pathways, and thus those elements which are responsible for the abnormal direction of thought are either reduced or destroyed. The damage is reversible and there is a tendency for the abnormally functioning cells to regain their activity. Each succeeding treatment removes this tendency. In the depressions, when this change has been effectively brought about, recovery ensues. In many types of schizophrenia this improvement is temporary because there is an inherent tendency for a downward course. One is sometimes surprised at the renewed intellectual interest in life that is awakened in an apparently deteriorated patient following the therapy. Only time can determine the permanence of recovery and the possibility of later complications.

Chronic Constrictive Pericarditis.—A follow-up study of 37 patients with constrictive pericarditis that Harrison and White saw at the Massachusetts General Hospital and in whom the clinical diagnosis was confirmed in all but a few at operation or at necropsy is presented. Nineteen of the patients are living, 17 are dead and 1 has not been examined lately. Twenty-eight of the group have had pericardial resection and 9 have not. The average age of the entire group was 30.2 years, of those operated on 28.8 years and of those not operated on 45.5 years. Fourteen of the 28 operated on were clinically cured although in a few a slight increase in venous pressure above the average normal remains, and 1 of the 14 died of pneumococcic pleurisy a year after operation. Of the other 14, 3 were much improved, 2 died of the disease itself, the death of 5 was related to the operation and 4 died of other complications from one month to seven years postoperatively. The condition of 3 of the 9 who did not have pericardial resection was so mild that operation was not necessary, 3 were too ill to undergo operation, 1 died of miliary tuberculosis before the operation could be carried out, 1 died before this type of operation was begun and 1 patient was lost sight of.

Surgical Treatment of Hypertension.—During the last ten years, according to Bartels and his collaborators, 54 patients with hypertension have been operated on at the Lahey Clinic. This is sufficient time to justify an evaluation of the results. The first 13 patients were subjected to a supradiaphragmatic splanchnicectomy and ganglioramisectomy and the others to a two stage subdiaphragmatic or transdiaphragmatic resection of the greater and lesser splanchnic nerves, with the removal of the twelfth thoracic, first and second lumbar ganglions, the visualization of the adrenal glands and biopsy of each kidney. If a sufficient amount of omentum was available, the left kidney

was decapsulated and a nephro-omentopexy was carried out, but if large accessory arteries penetrated the capsule of the kidney or the omentum was adhesive from previous operative procedures nephropexy was not attempted. The results confirm the experiences of others that surgery of the sympathetic nervous system may have an ameliorating effect on the blood pressure of patients with essential hypertension. The best results were obtained on patients with grade 2 or 3 hypertension whose ages were less than 40 and whose blood pressure responded to sedation. Age appears of considerable importance in selecting patients likely to obtain a satisfactory drop in blood pressure. Of 20 patients more than 40, only 2 had a drop in blood pressure as against 22 of 32 less than 40. Of the patients more carefully selected, 13 (34 per cent) of 38 had an excellent result and 11 had a slight drop in pressure. The blood pressure of the others was not altered. Symptomatic improvement occurred in 71 per cent; in half of these the blood pressure remained elevated. The operation appears justified when patients fulfil the selective criteria and when they understand that satisfactory lowering of the blood pressure is obtained in about one third of the cases.

Physiologically Directed Therapy in Pneumonia.—Barach proposes to show that recent advances in physiologically directed treatment may crucially alter the course in bronchopneumonia or lobar pneumonia of patients who do not respond to sulfonamide compounds. The measures employed were the administration of positive pressure, inhalations of helium-oxygen mixtures and inhalation of the vaporized solutions of neosynephrin and epinephrine. In the treatment of 4 patients with bronchopneumonia of undetermined origin and of 1 with lobar pneumonia the physiologically directed therapy was of crucial value as regards anoxia, respiratory obstruction and pulmonary edema. The importance of maintaining respiratory function in pneumonia and bronchopneumonia not responding to specific chemotherapy was illustrated by the response of the 5 patients to inhalational therapy.

Archives of Neurology and Psychiatry, Chicago

48:689-864 (Nov.) 1942

*Toxoplasmic Encephalomyelitis: VI. Clinical Diagnosis of Infantile or Congenital Toxoplasmosis; Survival Beyond Infancy. D. Cowen, A. Wolf and Beryl H. Paige, New York.—p. 689.

*Acute and Subacute Toxic Myelopathies Following Therapy with Arsphenamines. B. W. Lichtenstein, Chicago.—p. 740.

Insulin Sensitivity of Patients with Mental Disease: Factors in Their Serum Affecting Action of Insulin. M. M. Harris, New York.—p. 761.

*Effects of Destruction of Hypothalamus by Tumor. V. P. Collins, Boston.—p. 774.

Spinal Epidural Granuloma: Report of Case. J. V. Warren and J. Romano, Boston.—p. 789.

*Effect of Iodized Poppyseed Oil on Spinal Cord and Meninges: Experimental Study. R. L. Craig, Durham, N. C.—p. 799.

Use of Testosterone Proprionate in Treatment of Involutional Psychosis in Male. E. Davidoff and G. L. Goodstone, Syracuse, N. Y.—p. 811.

Fatality Following Intravenous Administration of Magnesium Sulfate: Report of Case. M. Rosenbaum and S. D. Lipton, Cincinnati.—p. 818.

Amphetamine Sulfate in Treatment of Spasmodic Torticollis: Report of Two Cases. A. Myerson and J. Loman, Boston.—p. 823.

Toxoplasmic Encephalomyelitis.—Cowen and his colleagues encountered 6 children who exhibited some or all of the features of infantile or congenital toxoplasmosis. Toxoplasmas have been isolated and positive serologic reactions have been obtained from all. Nine other instances were recognized at necropsy. Most of the latter 9 children died during the early weeks or months of life in the acute or subacute stage. The syndrome was characterized by the concomitant occurrence in infants at or soon after birth of multiple focal, bilateral areas of chorioretinitis, microphthalmos, nystagmus and ocular palsies, and of convulsions, hydrocephalus and multiple foci of intracerebral calcification. The first 6 clinically identified cases in which survival beyond infancy occurred indicate that, contrary to previous experience, the infection is not uniformly fatal and may become chronic, healed or latent. The clinical picture consists chiefly of the residual effects of the lesions occurring in the acute or the subacute stage. The principal symptom is usually diminution in vision due to the effects of multiple foci of healed chorioretinitis, which are readily identifiable ophthalmoscopically. Strabismus, microphthalmos and minor congenital ocular defects may also be present. Generalized convulsions or petit mal attacks may persist or make their appearance later. Internal hydrocephalus may become chronic and progressive. Foci of intracerebral calcification persist and may at first increase in number and size. Retardation in the development of speech and minor degrees of mental deficiencies occur. In many, if not all, the disease was congenital; therefore this form of toxoplasmic encephalomyelitis should be referred to as infantile or congenital to distinguish it from that which may be acquired during the juvenile period and in adult life. Infantile or congenital toxoplasmic encephalomyelitis is evidently not a rare disease; many cases have probably been erroneously classified as congenital malformation of the brain, cerebral birth injury, epilepsy, congenital hydrocephalus and the like. The identification of additional cases may suggest the epidemiology of the disease. At present the infection appears to be widespread in the United States; it also has been encountered in South America and Europe. Various mammals, and perhaps birds, are probably the animal reservoirs of the infection. The mode of transmission to man is not yet known.

Toxic Myelopathies.—In most cases of toxic myelopathy following arsphenamine therapy the changes in the spinal cord are so different from those in the brain that doubt arises as to the pathogenic relationship between the action of the drug and the alterations. Lichtenstein reports the data of his case and a review of similar ones recorded in the literature. The microscopic changes in his case consisted of extensive areas of demyelination in the central portions of the thoracolumbar segments of the spinal cord and of focal areas in the medulla oblongata, dense perivascular infiltrations with lymphocytes and plasma cells in the demyelinated areas and similar infiltrations in the forebrain and in the spinal cord unassociated with alterations in the parenchyma, focal leptomeningitis in regions in which the leptomeninges bordered on demyelinated tissue, proliferative alterations in the astrocytes in the demyelinated areas and slight degenerative changes in the peripheral nerves. No foci of softening, necrosis or signs of secondary degeneration were present. Postarsphenamine toxic myelopathy is apparently more common in the male than in the female; all the reported cases have occurred in adults. Most of the patients were symptom free prior to the myelopathy; the positive serologic reaction was the only abnormal finding. The onset of the myelopathy and the time of the syphilitic infection varied from a few years to forty. The only definite relationship was the onset of the myelopathy in a day to many weeks after arsphenamine therapy. The presenting motor or sensory symptoms, which were soon followed by flaccid paralysis, were referable to the lower extremities. With severe involvement urinary retention occurred early, and when the process was slow difficulty in micturition was present for some time before retention developed. The course of the disorder is characterized by an ascension of the motor and sensory disturbances, and for this reason many cases have been described as instances of Landry's paralysis. In the acute form, in which the disorder spreads to the medulla, death from respiratory paralysis may ensue in two weeks, and in the subacute form as much as ten weeks may elapse between onset and death from respiratory failure. Rarely the upward spread of the disorder stops spontaneously, and the patient may be discharged with flaccid paralysis of the lower extremities, anesthesias and sphincteric disturbances. When the evolution of the disorder is slow, death may occur from sepsis or pneumonia. Another wrong diagnosis made frequently is syphilitic myelitis. Such a diagnosis is dangerous, as it may cause the clinician to give more antisyphilitic treatment, which may hasten the progress of the disorder.

Destruction of Hypothalamus by Tumor.—The clinical and pathologic sequelae of a slowly growing tumor which involved the floor and walls of the third ventricle and destroyed all nuclei of the hypothalamus and severed functionally the hypophysial stalk, but which did not disturb the adjacent regions or obstruct the flow of cerebrospinal fluid, is reported by Collins. The following abnormalities were ascribable to the destruction of the hypothalamus by tumor: diabetes insipidus, suppression of the function of the anterior lobe of the pituitary, the thyroid, the ovaries and the adrenal glands and the disturbance of fat metabolism, sleep, thermal regulation and personality. The role of the thyroid in diabetes insipidus is demonstrated, and infor-

mation bearing on the anatomic and physiologic relationship between the hypothalamus and the anterior lobe of the pituitary gland is presented.

Iodized Poppyseed Oil.—Craig studied the toxicity on the spinal cord and meninges of iodized poppyseed oil 40 per cent from an experimental point of view. In the experiments he made an attempt to adjust the amount of the oil injected to the size of the dog so that it should be comparable to the maximal amount used clinically. The 6 dogs used were killed fourteen to three hundred and fourteen days after injection. In 5, examination of the spinal cord revealed that an inflammatory process involved the leptomeninges and the spinal blood vessels. The reaction tended to be more acute in animals killed early than in those killed late. A lesion within the cord was not observed in any dog. In 1 dog there was no reaction. These experimental results are at variance with those of other investigators, and it is suggested that the difference is related to the relative amount of the oil injected.

Archives of Ophthalmology, Chicago

28:959-1148 (Dec.) 1942

Applied Pharmacology of Skin in Ophthalmologist's Everyday Practice. A. Linksz, Hanover, N. H.—p. 959.
Papilledema in General Diseases. P. J. Leinfelder and W. D. Paul, Iowa City.—p. 983.
*Multiple Sclerosis as Etiologic Factor in Retrobulbar Neuritis. W. L. Benedict, Rochester, Minn.—p. 988.
Simple Quantitative Test for Acuity and Reliability of Binocular Stereopsis F. H. Verhoeff, Boston.—p. 1000.
Hereditary Corneal Dystrophies. E. H. McBain, San Francisco.—p. 1020.
*Results of Desensitization in Tuberculous Iritis. E. V. L. Brown, E. E. Irons and S. R. Rosenthal, Chicago.—p. 1028.
Cataract in Rats Fed Low Protein Diet. C. Rezende and F. A. de Moura Campos, São Paulo, Brazil.—p. 1038.
*Adie's Syndrome (Pupillotonic Pseudotabes). O. Lowenstein and E. D. Friedman, New York.—p. 1042.
Hemorrhage After Cataract Extraction: Clinical and Experimental Investigation of Its Cause and Treatment. G. DeVoe, New York.—p. 1069.

Retrobulbar Neuritis.—Benedict reviewed the records of more than 400 patients with retrobulbar neuritis, seen at the Mayo Clinic between 1920 and 1940, to determine whether patients for whom a tentative diagnosis of multiple sclerosis was made experienced further evidence of the disease. By eliminating other factors which might cause blindness, multiple sclerosis was suspected in 90 of the 400 patients. In 41 of the 90 further evidence of the disease has appeared. In not 1 of the remaining 49 have the retrobulbar neuritis and the scotoma been found to be due to another cause. At the first appearance of blindness it was often possible to make a diagnosis of arteriosclerosis, diabetes, cerebral tumor, encephalitis, arachnoiditis and neuritis arising from exogenous toxemia as the cause of the retrobulbar neuritis. Sometimes a tentative diagnosis was made of one or another of these probable etiologic factors, for example alcohol-tobacco amblyopia, just as at other times multiple sclerosis was suspected because of the history and of the ocular and general symptoms. It seems reasonable to the author, in the absence of signs or symptoms of other causes, to presume that the retrobulbar neuritis is due to multiple sclerosis, even though the etiology of the disease cannot be substantiated on any other grounds.

Tuberculous Iritis.—Brown, Irons and Rosenthal observed that the exposure of 2 patients with tuberculous iritis recurrent for four and thirteen years, respectively, to the inhalation of fumes from saline suspensions of dead tubercle bacilli was followed by a definite reduction of sensitivity for two years. This was determined by periodic titrations with dilutions of tuberculin administered intracutaneously. No final conclusion can be arrived at from the observation of only 2 cases, but for the present the authors wish to report only what they observed. The inhalation method was discovered accidentally in the Tice laboratory of the Municipal Tuberculosis Sanitarium of Chicago. In certain members of the laboratory staff symptoms varying from malaise to chills, fever up to 104 F., a tickling sensation in the posterior part of the pharynx, cough, vomiting, headache and backache developed periodically. After several months the attacks lessened and finally abated. Previously positive reactions to tuberculin tests of these affected persons were decreased. It was inferred that the issuing vapors might be the causative agent, and experimentation on more than 100 guinea pigs confirmed the assumption. The agent responsible for decreasing sensitivity is not known, but some volatile substance is suspected. In planning inhalation treatment for their first patient the authors had no experience other than that with the guinea pigs to guide them.

Adie's Syndrome.—The following conclusions are given by Lowenstein and Friedman in their discussion of Adie's syndrome: 1. Pupillotonic reactions may be caused by postganglionic and preganglionic peripheral lesions of the third nerve and by lesions in the great vegetative centers of the diencephalon and their connections with the mesencephalon. 2. Adie's syndrome, characterized by pupillotonic reactions with irritative sympathetic symptoms and absent tendon reflexes, is due to a heredodegenerative disease localized in the great autonomic centers of the diencephalon and their connections with the mesencephalon. It generally is not of syphilitic origin, but as a syndrome it may be produced by asymptomatic syphilis nervosa. 3. As the nervous manifestations of congenital syphilis are more frequently localized in the sympathetic center than are those of acquired syphilis, it is possible that in some cases the syndrome is due to congenital syphilis. 4. The pupillographic picture of Adie's syndrome is generally unequivocal. 5. Physostigmine contracts the Adie pupil (as it does the normal pupil) and restores its ability to react to light and to dilate to distant vision in twelve to twenty minutes after its local application. 6. The physostigmine test enables one to differentiate Adie's syndrome from similar syndromes due to acquired syphilitic infection. 7. Neurotonia (prompt contraction of the pupil to light but sluggish and retarded dilatation and diminished or absent convergence reaction) appears to be an inversion of Adie's syndrome. The relation with Adie's syndrome is that either syndrome may be substituted for the other in the hereditary sequence; therefore the basic processes must be considered identical. 8. The entities neurotonia and pupillotonic pseudotabes include many minor and abortive forms which can be detected by pupillography; they are rather frequent anomalies and have the value of a focal degenerative stigma in the nervous system.

Archives of Otolaryngology, Chicago

36:619-772 (Nov.) 1942

External Nasal Deformities and Methods Used in Their Repair. W. B. Davis, Philadelphia.—p. 619.
Gunshot Lesions of Larynx. V. Trutnev, Moscow, Soviet Union.—p. 629.
*Rationale of Estrogen Therapy of Primary Atrophic Rhinitis (Ozena): Relationship of Pharyngeal Pituitary to Ozena. S. L. Ruskin, New York.—p. 632.
Manifestations of Dermatologic Diseases in Upper Respiratory Tract. V. V. Wood, St. Louis.—p. 650.
Scleroma. D. S. Cunning and Du P. Guerry 3d, New York.—p. 662.
Foreign Bodies of External Canal, Middle Ear and Mastoid and Their Complications: Report of Three Cases. W. F. Mosher, Ventura, Calif.—p. 679.
Treatment of Cysts of Larynx. G. B. New, Rochester, Minn.—p. 687.
Effects of Various Types of Motion on Differences in Hydrostatic Pressure Between Ends of Semicircular Canal: Theoretical Analysis. R. Morgan, College Park, Md.; R. D. Summers, Westminster, Md., and S. P. Reimann, Philadelphia.—p. 691.
*Tic Douloureux of Glossopharyngeal Nerve. P. H. Streit.—p. 704.
Efficacy of Vasoconstrictor Agents in Obstructed Nose: Quantitative Evaluation. H. J. Sternstein, Boston.—p. 713.

Atrophic Rhinitis.—The intimate relation of the vascular supply of the nasal and of the nasopharyngeal mucosa suggested to Ruskin a direct hormone action of the pharyngeal pituitary on the nasal mucosa. This led him to study the physiologic properties of the pharyngeal pituitary in mice, with the result that a hormone mechanism related to the pituitary gland and possessing estrogenic properties appeared to be a normal constituent of the nasal mucosa. He and others have since tried clinically (1) a nasal spray of estrogen in oil alone, (2) a nasal spray of estrogen in oil combined with parenteral injections and (3) oral administration of estrogen tablets. The combined nasal spray and parenteral injection of estrogen in oil appeared the most effective. Amniotin in oil and α-estradiol dipropionate as a nasal spray have seemed equally effective. One patient

was given diethylstilbestrol in oil, 10,000 international units of estrogen per cubic centimeter, for three months. During this time the patient used intranasally as drops three 10 cc. vials, a total of 300,000 international units. There were no unpleasant by-effects. The nasal mucosa appeared to be definitely improved, and the patient has not required more than an occasional observation for more than a year. The crusting had diminished, and there was little nasal discomfort. Diethylstilbestrol may further aid the therapy of primary atrophic rhinitis (ozena). However, the first essential is to differentiate between primary atrophic rhinitis of vascular origin and secondary atrophic rhinitis from severe nasal infection.

Glossopharyngeal Neuralgia.—True glossopharyngeal neuralgia is extremely rare. In the approximately 30 cases that Streit collected from the literature the clinical picture was strikingly uniform. The unilateral excruciating paroxysms of pain always strike some part of the glossopharyngeal sensory area—the tonsil, the back of the tongue or the pharynx. The pain is variously described as lancinating, as knifelike or as a stab of a red hot iron. Each pain usually lasts only a few seconds. The paroxysms tend to occur in a series over a few days to a few weeks; in nearly every case intermissions of several months have occurred. The pain usually radiates to the ear, the tongue and ear or the tongue and pharynx. The method *par excellence* of starting attacks of glossopharyngeal neuralgia is to drink hot or cold liquids—cold is most effective. The attacks may also be induced by swallowing, talking, yawning, coughing, shouting, sneezing and touching the angle of the mandible. Often the attacks seem to occur spontaneously. For treatment the injection of alcohol is not to be considered, as the glossopharyngeal nerve is extremely near the vagus nerve and large blood vessels. Therefore surgical procedures (external approach for extirpation of the glossopharyngeal nerve in the neck and intracranial section of the glossopharyngeal nerve) must be resorted to. The latter gives complete and permanent relief. If this procedure is contraindicated, peripheral section, which is complicated, difficult and delicate but possible, can be performed. The subjective signs of section are anesthesia of the retropharynx and tonsil on the affected side and loss of taste in the posterior third of the tongue. The swallowing of solids may also be interfered with. If extreme hypertension or cardiovascular disease contraindicates intracranial intervention, section and extirpation of the glossopharyngeal nerve in the neck are means of obtaining relief. The greatest difficulty in this operation is to recognize the nerve.

Endocrinology, Springfield, Ill.

31:481-572 (Nov.) 1942. **Partial Index**

Phosphorylation of Fat in Absence of Adrenal Glands as Measured with Radioactive Phosphorus. N. Stillman, C. Entenman, E. Anderson and I. L. Chaikoff, Berkeley, Calif.—p. 481.

Regeneration of Adrenal Gland Following Enucleation and Transplantation, with Special Reference to X Zone. M. K. McPhail and H. C. Read, Halifax, N. S., Canada.—p. 486.

*Metabolism of Estrone in Men and Nonpregnant Women. G. Pincus and W. H. Pearlman, Worcester, Mass.—p. 507.

Excretion of Estrogen in Bile. A. Cantarow, A. E. Rakoff, K. E. Paschkis, L. P. Hansen and A. A. Walking, Philadelphia.—p. 515.

Anterior Pituitary Stimulating Action of Yohimbine. N. W. Fugo and E. G. Gross, Iowa City.—p. 529.

Fertility of and Sex Ratios from Adult Female Rats and Rabbits Treated While Immature with Gonadotropic Hormone. L. E. Casida and R. L. Murphree, Madison, Wis.—p. 545.

Response of Metrial Gland to Treatment with Various Steroids. G. Masson and H. Selye, Montreal, Canada.—p. 549.

Influence of Sex on Carbohydrate Metabolism. Isabelle Grayman, N. Nelson and I. A. Mirsky, Cincinnati.—p. 553.

Endocrine Action of Thyroglobulin Antibodies. J. Lerman, Boston.—p. 558.

Effect of Vitamin B_1 and Yeast on Calory Intake and Weight Balance of Hyperthyroid Dogs. V. A. Drill and C. B. Shaffer, Princeton, N. J.—p. 567.

Estrogen Metabolism.—The data that Pincus and Pearlman present demonstrate a close resemblance in the physical and chemical properties of the estrogenic material of the three principal urine fractions and those of the presumed corresponding crystalline estrogens. The principal phenolic fractions of the pooled urines of 8 male and 13 female patients (with no endocrine disorders) were the strong phenolic, the weak phenolic nonketonic and the weak phenolic ketonic. By the application to such fractions of certain partitioning between solvents and an alcoholic separation, evidence was obtained that these three principal fractions behave as though they contain theelol, dihydrotheelin and theelin. After injection of theelin the titer of all three fractions increased. The calculated recoveries indicate a conversion of the injected theelin principally to theelol but also to dihydrotheelin. Less than 2 per cent of the injected estrogen could be accounted for by increased urinary excretion. Although the female patients had higher preinjection levels, the calculated recoveries in the urine showed no decided differences between the sexes.

Georgia Medical Association Journal, Atlanta

31:409-436 (Nov.) 1942

Complications in Matching of Blood for Transfusions. J. Funke, Atlanta.—p. 409.

Blood Registry Plan of West End Civitan Club, Atlanta, Ga. C. K. Howard, Atlanta.—p. 411.

What Every Physician Should Know About Cross Examination. M. Sulzberger Jr., New York.—p. 414.

Excerpts from Shall Organized Medicine Lead or Follow? G. W. Cottis, Jamestown, N. Y.—p. 425.

Journal of Allergy, St. Louis

14:1-104 (Nov.) 1942

Reactions of Ragweed Sensitive Individuals to Skin Tests with Nucleic Acids and Related Compounds. W. B. Sherman, New York.—p. 1.

Chemistry of Allergens: VII. Nature of Unidentified Allergens of Cottonseed. J. R. Spies, Dorris C. Chambers, H. S. Bernton and H. Stevens, Washington, D. C.—p. 7.

*Cutaneous Reactions as Index to Desensitization to Histamine. H. C. Browne, Rochester, Minn.—p. 19.

Newer Interpretation of Positive Skin Reactions. B. G. Efron, New Orleans.—p. 49.

Spontaneous and Induced Sensitivity to Foodstuffs: X-Ray Studies of Small Intestine in Man and Guinea Pig. W. M. Wing and C. A. Smith, New York.—p. 56.

Skin Reactions to Electrophoretic Fractions of Timothy Pollen Extract. H. A. Abramson, M. G. Engel and D. H. Moore, New York.—p. 65.

Respiratory Allergy from Arsphenamines: Personal Case Report. T. S. Saunders, Portland, Ore.—p. 76.

Hypersensitivity to Sulfonamides. F. Kalz and Lea C. Steeves, Montreal, Canada.—p. 79.

Chronic Otorrhea Due to Food Sensitivity. L. J. Noun, Des Moines, Iowa.—p. 82.

Biotin and Skin Sensitivity. E. B. Keller Jr., Philadelphia.—p. 87.

Seasonal Somnolence, Possible Pollen Allergy: Case Report. L. Sternberg, New York.—p. 89.

Cutaneous Reactions and Desensitization to Histamine.—Browne describes the response of the skin to gradually increased intradermal injections of histamine. He observed that histamine flares, to be correctly evaluated, must be produced under a constant environmental temperature, a standard posture of the individual and the arm to be tested, a standard source of light and a uniform technic. A room at 78 F. with 40 per cent humidity and the patient in the supine position with the arm at a straight angle was satisfactory. A 75 watt Mazda lamp 2½ feet above the flare zone is preferable to daylight for the reading of flares. It appears that only a slight change in cutaneous temperature is necessary to cause a great change in the area of the flare. The most useful dilution of histamine for cutaneous testing was 1 : 100,000 (histamine acid phosphate used, dilution calculated as base). The histamine wheal is not a good criterion to use in comparative studies of endermic reactions. Histamine flares provoked at intervals over a period of approximately two weeks in subjects treated with gradually increasing amounts of histamine administered subcutaneously twice a day disappear in 40 per cent of cases, are significantly reduced in 25 per cent and are insignificantly changed in 35 per cent. There is an apparent correlation between the clinical result of treatment and the state of the histamine flare. If the cutaneous reaction is assumed to be an index to systemic desensitization (as it is in allergic states), it can be said that 40 per cent of the patients treated showed a complete desensitization, 25 per cent partial desensitization and 35 per cent no desensitization. The desensitization phenomenon probably varies in the individual and is perhaps relatively short lived.

Journal of the Mount Sinai Hospital, New York

9:213-892 (Nov.-Dec.) 1942. **Partial Index**

Historical Fragments on Neurologic and Psychiatric Specialties: Factors and Results in Eminent Medical and Specifically Neurologic Career. A. Meyer, Baltimore.—p. 213.
Arrested Cerebral Development, with Special Reference to Its Cortical Pathology. B. Sachs, New York.—p. 283.
Reflections Aroused by Unusual Tumor of Cerebellum. P. Bailey, Chicago.—p. 299.
*Boeck's Sarcoid: Report of Six Cases with One Necropsy. S. S. Bernstein and B. S. Oppenheimer, New York.—p. 329.
*Recent Advances in Diagnosis and Treatment of Ruptured Intervertebral Disks. W. E. Dandy, Baltimore.—p. 384.
*Disturbances in Lipid Metabolism and Central Nervous System. C. Davison, New York.—p. 389.
Atypical Acoustic Neuromas. E. D. Friedman, New York.—p. 435.
Inhibitory Effect of Steroid Sex Hormones on Gonadotropic Activity of Hypophysis. S. H. Geist and U. J. Salmon, New York.—p. 446.
*Amaurotic Family Idiocy. J. H. Globus, New York.—p. 451.
Histopathologic Observations on Changes of Eyes in Case of Amaurotic Family Idiocy (Infantile Type of Tay-Sachs Disease). G. B. Hassin, Chicago.—p. 536.
Interrelationship of Mind and Body. F. Kennedy, New York.—p. 607.
Some Observations Concerning Relationship Between Multiple Sclerosis and Chronic Epidemic Encephalitis. K. H. Krabbe, Copenhagen, Denmark.—p. 617.
Type of Personality Susceptible to Parkinson Disease. I. J. Sands, Brooklyn.—p. 792.
Chemical Differentiation of Tay-Sachs Disease and Other Lipidoses. H. Sobotka, New York.—p. 795.

Sarcoidosis.—Bernstein and Oppenheimer report 6 cases of sarcoidosis and state that, although it is said to be characterized by a generally benign course, 1 of their patients died from diffuse visceral sarcoidosis, 1 is completely invalided as a result of chronic failure of the right side of the heart secondary to advanced pulmonary sarcoidosis and a nephrotic syndrome and 1 has suffered progressive loss of vision due to sarcoid infiltration of the uveal tract. The sarcoidosis of 2 patients is limited to the peripheral lymph nodes without any systemic manifestations and 1 patient, with lymphadenopathy involving the left cervical chain, who had intermittent fever and lost considerable weight, remains chronically ill. Microscopic confirmation was attained in all cases by biopsies of lymph nodes, tonsils, iris or skin. At necropsy the patients who died disclosed diffuse visceral sarcoidosis. The tendency of the disease to chronicity and spontaneous retrogression may at times give a misleading picture of its extent. Positive tuberculin reactions, strong in only 1 instance, were obtained from 4 patients. Tubercle bacilli were never isolated, and associated active tuberculosis was never established. The hematologic picture was not unusual and the sedimentation rate, contrary to the experience of some observers, was not accelerated. Bone changes were not disclosed and 3 patients had no cutaneous manifestations. The temperature of 2 patients exceeded 103 F. for relatively long periods. Iridocyclitis was present in 2, hyperproteinemia did not occur and there was a reversal of the albumin-globulin ratio with a nephrotic syndrome in 1. Although most observers consider the lesions radioresistant, the authors' experience with roentgen therapy has been most encouraging. Three of 4 patients so treated showed some improvement, and in the fourth a hugh mass of cervical nodes disappeared within two weeks. Radiosensitivity may vary with the stage of the disease. In an involutionary phase the response may be much more prompt than when the disease is in the process of evolution and hence radioresistant; this was exemplified by 1 patient whose cervical masses retrogressed but were subsequently resistant and the disease, preceding the patient's death, became widely disseminated. The cause of sarcoidosis remains unknown; there is some evidence of its relationship to tuberculosis.

Ruptured Intervertebral Disks.—Since the elimination of contrast mediums in April 1941, Dandy has made a correct diagnosis in 65 cases by clinical examination alone. He believes that iodized oil and air injections into the spinal canal do far more harm than good; their avoidance is most enthusiastically welcomed by the patient. In view of the fact that 96 per cent of all ruptured vertebral disks are at the fourth, fifth and sixth lumbar spaces and since unilateral exposure (hemilaminectomy) is adequate to disclose the disk, regardless of the interspace that is involved, it is only necessary to make the diagnosis of a ruptured lumbar vertebral disk. The diagnosis is almost pathognomonic from signs and symptoms alone.

Lipid Metabolism and Central Nervous System.—The diseases of lipid metabolism, according to the type of lipid deposit, are three: amaurotic family idiocy and Niemann-Pick disease, Gaucher's disease and xanthomatosis. Davison observes that the generalized disturbance (deposition) of lipid in amaurotic family idiocy and Niemann-Pick disease involves not only the central nervous system but also the entire reticuloendothelial system. Careful study is required to find a generalized instead of a localized lipid disturbance as seen in the central nervous system. The lipid deposits in the nervous and reticuloendothelial systems consist of phosphatides. In Niemann-Pick disease a specific increase of sphingomyelin has been demonstrated. Gaucher's disease, a disorder of lipid metabolism of the reticuloendothelial system, may occasionally affect the central nervous system. The predominating lipid consists of kerasin of the cerebroside group. Xanthomatosis consists of granulomatous masses deposited throughout most of the organs. The calvarium may also be invaded and the nervous system compressed or actually infiltrated. The disturbed lipid metabolism involves the reticuloendothelial system; the predominating substance is cholesterol.

Amaurotic Family Idiocy.—Globus gives a brief historical review of amaurotic family idiocy, clinical histories are reviewed briefly and detailed anatomic observations are presented of 12 cases of the infantile form (in 1 case the affliction was combined with Niemann-Pick disease) and of 1 case of the juvenile form of the disease. The clinical and anatomic features of the late infantile, adult and congenital forms are described and their relationship to the entity is discussed. New observations on the ubiquity of the disease process include the disclosure of isolated cell groups outside the central nervous system exhibiting cell alterations characteristic of the disease. Changes in the posterior lobe of the pituitary are advanced, and the numerous globoid granular bodies found there are unusually large. The several forms of the disease, including one which is associated with Niemann-Pick lipid histiocytosis, belong to a single disease entity characterized by a disturbance in lipid metabolism. Too great emphasis has been placed on focal variations in the intensity of the pathologic process as observed in the several variants of the disease. A study of the endocrine organs in several of the cases which the author reports failed to provide evidence supporting the view that their dysfunction is at the base of the disease process. The presence of nerve cell groups within the territorial domain of some glands of internal secretion (adrenal, posterior lobe of the pituitary body) is thought by him to be no more than an item in the ubiquitous disease process which universally affects nerve cells. The general conclusion is that amaurotic family idiocy is a malformation characterized by defective constructive material in the affected cells or by their (the cells) lack of capacity for assimilating available material. Either of these difficulties is capable of causing regressive morphologic changes, resulting in dysfunction and finally in total disintegration of the affected cells.

Journal of Nat. Cancer Inst., Washington, D. C.

3:131-226 (Oct.) 1942

Induction of Hepatic Lesions, Hepatomas, Pulmonary Tumors and Hemangioendotheliomas in Mice with *o*-Aminoazotoluene. H. B. Andervont, H. G. Grady and J. E. Edwards.—p. 131.
Production of Subcutaneous Sarcomas in Mice with Tars Extracted from Atmospheric Dusts. J. Leiter, M. B. Shimkin and M. J. Shear.—p. 155.
Production of Tumors in Mice with Tars from City Air Dusts. J. Leiter and M. J. Shear.—p. 167.
Adenocarcinoma of Pyloric Stomach and Other Gastric Neoplasms in Mice Induced with Carcinogenic Hydrocarbons. H. L. Stewart and E. Lorenz.—p. 175.
Spontaneous Fibrosarcoma of Foreleg and Paw in C3H Mouse. J. E. Edwards, A. J. Dalton, J. White and T. N. White.—p. 191.
Review of Some Spontaneous Neoplasms in Mice. S. W. Lippincott, J. E. Edwards, H. G. Grady and H. L. Stewart.—p. 199.
Carcinogenic Effectiveness of Ultraviolet Radiation of Wavelength 2537A. H. F. Blum and S. W. Lippincott.—p. 211.
Influence of Limited Application of Methylcholanthrene on Epidermal Iron and Ascorbic Acid. C. Carruthers and V. Suntzeff.—p. 217.
Reduction of Total Lipid-Protein Nitrogen Ratio of Mouse Epidermis by Single Application of Methylcholanthrene. L. F. Wicks and V. Suntzeff.—p. 221.

Journal of Nervous and Mental Disease, New York

96:493-616 (Nov.) 1942

Sign of Babinski in Macaca Mulatta. F. M. Forster and J. B. Campbell, New Haven, Conn.—p. 493.

Electrical Shock Treatment of Psychoses. W. Furst, Indiantown Gap, Pa., and J. F. Stouffer, Philadelphia.—p. 499.

Encephalomyeloradiculitis. C. G. Polan and A. B. Baker, Minneapolis. —p. 508.

One Hundred Cases of Indecent Exposure. A. J. Arieff and D. B. Rotman, Chicago.—p. 523.

Francis X. Dercum: Physician, Teacher and Philosopher. T. B. Throckmorton, Des Moines, Iowa.—p. 529.

Cerebral Air Embolism: Question of Arterialization of Intravenous Air Across the Barrier of Pulmonary Capillaries: Report of Case Following Assumption of Knee Chest Position Post Partum, with Recovery. L. Rangell, New York.—p. 542.

Acute Cardiovascular Collapse After Insulin Shock Treatment: Report of Case. A. A. Weil, Augusta, Maine.—p. 556.

Megasigmoid in Catatonic Stupor. L. Kerschbaumer, Clarinda, Iowa. —p. 562.

Journal of Neuropath. & Exper. Neurology, Baltimore

1:129-240 (April) 1942

Hemochromatotic Pigmentation of Central Nervous System. F. H. Lewey and S. R. Govons, Philadelphia.—p. 129.

"Motor" Cortex of Cat. H. W. Garol, New Haven, Conn.—p. 139.

Glioblastoma Arising in Hypothalamic Teratoid and Invading Neurohypophysis. P. M. Levin, Dallas, Texas.—p. 146.

Cerebral Vascular Changes in Carbon Monoxide Poisoning: Report of Case. G. Eros and G. Priestman, New York.—p. 158.

Brain Changes in Electrically Induced Convulsions in the Human. B. J. Alpers and J. Hughes, Philadelphia.—p. 173.

Post-Traumatic (Concussion) Changes in Spinal Cord, Roots and Peripheral Nerves. I. M. Scheinker, Cincinnati.—p. 181.

Neuropathologic Findings in Brain of Three Additional Cases of Schizophrenia Treated with Insulin. A. Ferraro, New York.—p. 188.

Softening of Central Nerve Tissues. G. B. Hassin, Chicago.—p. 200.

Tumors of Aqueduct of Sylvius: Blastomatous Formations of Varied Origin, Limited to Mesencephalon. J. H. Globus, New York; H. Kuhlenbeck, Philadelphia, and D. Weller, New York.—p. 207.

Neural Mechanisms of Athetosis and Tremor. P. C. Bucy, Chicago. —p. 224.

Journal of Nutrition, Philadelphia

24:307-404 (Oct.) 1942. **Partial Index**

Effect of Glucose and Sucrose on Respiratory Quotient and Muscular Efficiency of Exercise. Margaret Wrightington, Rochester, N. Y. —p. 307.

Thiamine Requirement of Albino Rat as Influenced by Substitution of Protein for Carbohydrate in Diet. W. W. Wainio, State College, Pa.—p. 317.

Calcium, Phosphorus and Nitrogen Metabolism of Young College Women. H. McKay, M. B. Patton, M. A. Ohlson, M. S. Pittman, R. M. Leverton, A. G. Marsh, G. Stearns and G. Cox.—p. 367.

Body Fats in Rat Acrodynia. F. W. Quackenbush and H. Steenbock, Madison, Wis.—p. 393.

Medical Annals of District of Columbia, Washington

11:419-464 (Nov.) 1942

War Conditions in Royal Navy. W. R. Patterson, Washington.—p. 419.

Medical Experiences in Naval Warfare. A. J. White, Washington. —p. 424.

Communicable Diseases of Children: Their Prevention, Control and Treatment. J. S. Wall, Washington.—p. 428.

*Arteriovenous Fistula Between Ascending Aorta and Superior Vena Cava: Report of Case. J. M. Barker and W. M. Yater, Washington.—p. 439.

Arteriovenous Fistula.—Barker and Yater report a case in which it was impossible to determine whether one dealt with a superior vena cava occlusion or with an arteriovenous communication between the superior vena cava and the aorta. The patient, a Negro of 44, was admitted to the Georgetown University Hospital complaining of swelling of the eyes, face, neck and the right upper extremity for nine hours. He had been perfectly well until 5 o'clock on the morning of his admission, when he was awakened by a "stiffness and pulling in the throat." Although the diagnosis of spontaneous arteriovenous fistula between an aneurysm of the ascending aorta and the superior vena cava was considered, the absence of a contniuous harsh murmur with systolic accentuation, thrill, red venous blood and venous pulsations made a definite diagnosis impossible. These signs are evidently not essential for such a diagnosis. The sudden appearance of edema of the upper half of the body with cyanosis and great elevation of the venous pressure in a patient with an aneurysm of the ascending aorta probably usually denotes the onset of a spontaneous arteriovenous fistula between the aneurysm and the superior vena cava. The only other possible condition, thrombosis of the superior vena cava, is even rarer. The authors' patient died one hundred and eleven days after the onset and death was caused by asphyxia from laryngeal obstruction due to edema of the larynx. At necropsy the anatomic diagnoses were syphilitic aortitis, syphilitic aortic aneurysm of the ascending aorta, arteriovenous fistula between the aneurysm of the ascending aorta and the superior vena cava produced by spontaneous rupture of the former into the latter, varices of the great veins of the head, neck and thorax, stenosis of the glottis due to edema, edema of the upper half of the body and a healed Ghon tubercle.

New England Journal of Medicine, Boston

227:575-616 (Oct. 15) 1942

Minor Psychiatric Disturbances in War and Civilian Life: Diagnosis of the Psychoneuroses. D. J. MacPherson, Boston.—p. 575.

Id.: Psychiatric Components in Medical Disease: Psychosomatic Medicine. J. E. Finesinger, Boston.—p. 578.

Id.: Therapeutic Procedures in Psychoneurosis. E. Lindemann, Boston. —p. 584.

Clinical Features of Pancreatic Lithiasis: Report of Two Cases. R. E. Moss and E. D. Freis, Boston.—p. 590.

Diseases of Thyroid Gland. J. H. Means, Boston.—p. 594.

227:617-652 (Oct. 22) 1942

Audiometry in General Practice. W. Mueller, Boston.—p. 617.

Hearing Handicaps in Children of Today: Importance of Clinic Programs for Their Early Study and Remedial Guidance. Ruth P. Guilder, Boston.—p. 619.

Work of Boston Guild for the Hard of Hearing. Eunice Acheson Pugh, Boston.—p. 624.

Castration for Carcinoma of Prostate: Report of Forty-One Cases. C. H. Neuswanger and V. Vermooten, New Haven, Conn.—p. 626.

Premonitory Symptoms of Myocardial Infarction. N. H. Boyer, Boston. —p. 628.

Proteinuria and Associated Renal Changes. W. Dock, New York. —p. 633.

Regional Anesthesia. M. Brown and M. J. Nicholson, Boston.—p. 636.

227:653-690 (Oct. 29) 1942

Eczema and Pruritus in the Aged. L. E. Anderson, Springfield, Mass. —p. 653.

Intracranial Aneurysm of Internal Carotid Artery. T. W. Botsford, Boston.—p. 657.

Gastrointestinal Symptoms and Inguinal Hernia. R. S. Myers and R. Zollinger, Boston.—p. 660.

Emergency Medical Service for a Small City. F. T. Hill, Waterville, Maine.—p. 662.

Is Tuberculosis Increasing? J. A. Foley, Boston.—p. 664.

Bile Pigments. C. J. Watson, Minneapolis.—p. 665.

New York State Journal of Medicine, New York

42:2079-2174 (Nov. 15) 1942

Pregnandiol Excretion in Normal Women. G. P. Heckel, Rochester. —p. 2103.

Some Observations on Anesthesia for Neurosurgery. B. B. Hershenson, Brookline, Mass.—p. 2111.

*Functional Disorders of Feet and Their Treatment. D. J. Morton, New York.—p. 2119.

Experiments on Cadaver Nerve Graft and "Glue" Suture of Divided Peripheral Nerves. N. de Rezende, Rio de Janeiro, Brazil.—p. 2124.

Pilonidal Cysts: Safe, Effective Office Treatment. C. G. Heyd, New York.—p. 2129.

Tuberculosis in Adolescents and Young Adults. R. Horton, Oneonta. —p. 2131.

Androgens in Treatment of Dysmenorrhea. B. L. Cinberg, New York. —p. 2138.

Disorders of Feet.—Morton states that the most direct cause of metatarsalgic trouble is shortness of the first metatarsal, the second source is a rearward position of the sesamoid bones and the third and most common cause is a looseness or laxity of the basal joints of the first metatarsal segment. The whole range of symptoms are not unlike those present in any other chronically strained joint persistently subjected to continued strains of similar violence or intensity. Therefore cases of chronic joint strain are due to improper weight distribution, and the symptoms are maintained and exaggerated through daily persistent abusive function. Consequently the immediate phases of treatment are (1) restriction of activities and weight bearing in accordance with the severity of symptoms, (2) rest, (3) fre-

quent brief periods of rest during the day with the legs and feet supported at hip level, (4) removal of all sources of surface irritation (corns, calluses, warts) and avoidance of badly fitting shoes, (5) contrast plunges daily (late afternoon preferably) to counteract the irritative effects of each day's activities and to establish improved circulatory conditions and (6) other therapeutic measures (physical therapy or drugs) as indicated. The signs of faulty shoes and those due to internal foot disorder must be distinguished. A helpful working rule is to assume (in general) that pain on the top and sides of the foot calls for a check on the shoe; when it is on the bottom or the sole of the foot the trouble is generally inside the foot. At least a dorsoplantar roentgenogram should be taken of both feet in every case. Soft tissues and nerves that have been more or less irritated for months or years do not become normal in a few hours or days. Permanent results require intelligent and patient treatment.

Northwest Medicine, Seattle

41:367-400 (Nov.) 1942

Roentgen Diagnosis of Obstructing Bronchial Lesions. G. W. Holmes, Boston.—p. 370.
Psychoneurosis in World War II. N. K. Rickles, Seattle.—p. 373.
Water Balance in Pregnancy. R. D. Reekie, Spokane, Wash.—p. 377.
Prostigmine in Delayed Menstruation. D. Parrella, Brooklyn.—p. 384.
*Criteria for Diagnosis of Brucellosis. J. F. Griggs, Claremont, Calif. —p. 389.

Criteria for Diagnosis of Brucellosis.—The acute, well known, form of brucellosis is characterized by a high, usually persistent, fever and profuse perspiration. The patient may feel as if he had a severe, prolonged influenza or dengue fever, or he may be remarkably comfortable and clear headed for the severity of his fever. Physical changes are rare, but an enlarged spleen may be present. The diagnostic criteria are a positive blood agglutination test, a positive blood culture, a leukopenia relative to the fever, a history of consuming raw milk or its products, the handling of infected cattle or their carcasses or exposure to Brucella in the laboratory. For a positive diagnosis of the chronic form, Griggs declares, the first criterion is a really ill patient. A long and searching history must be taken, otherwise the disease is not likely to suggest itself. The typical history reveals a rather long total period of ill health. The course may be an undulant one with some constant features or it may include complete remissions of good health, interspersed with recurrent periods of vague or atypical illness. The symptoms may be decidedly varied. The history often suggests a psychoneurosis. The temperature should be taken daily in the late afternoon for at least five minutes. Fever, if present, reveals that a probable infection is present. However, fever may be absent in active chronic brucellosis. When fever is present it should be compared with other observations, particularly the blood count. If it is absent the diagnosis must be confirmed by other data. The physical examination, except for fever, is negative, as is the roentgen examination except for pulmonary or bone lesions in about 5 per cent of patients. The bone lesions show destruction of cortical tissue in a loculated manner with a relative absence of periosteal reaction. The blood picture may vary widely, but it tends to show a relative lymphocytosis and leukopenia and/or a mild anemia with a high color index. The exclusion of other probable or possible diseases is most important. Coincident conditions must be identified and assigned their proper share in the total symptomatology. The power of the polymorphonuclear leukocytes to ingest living brucella organisms from a fresh culture of fresh citrated blood should be tested before cutaneous or vaccine tests are performed. If some of the patient's cells ingest as many as thirty-one or forty or more bacteria and if all phagocytose some bacteria, the test is diagnostically significant. Like the agglutination test, this opsonocytophagic test is not an index of infection but an expression of specific resistance. A positive test is only a part of an integrated diagnostic pattern. The blood agglutination test is the least useful of all the tests in the diagnosis of chronic brucellosis. However, if positive, it may be significant of probable brucellosis. Positive cultures of Brucella from the blood or other body fluids are irrefutable proof. The intradermal test, performed after the blood tests and fever record are completed, is the most important of the objective tests. If other tests are conclusive the cutaneous test should be omitted, as necrosis of the skin or premature desquamation of epidermis (near necrosis) is easily caused by a strong concentration of brucella protein in sensitized persons. A definitely favorable response to brucella vaccine therapy is diagnostically confirmatory. This therapeutic test may not be evident until after months or years of therapy. An unfavorable but diagnostic reaction is hypersensitivity, that is, local tissue intolerance, to vaccine. If this is anticipated, it can and should be avoided. The diagnosis emerges out of certain combinations of diagnostic data and not from any one or two air tight criteria.

Public Health Reports, Washington, D. C.

57:1599-1634 (Oct. 23) 1942

*Production of Carious Lesions in Molar Teeth of Hamsters (Cricetus Auratus). F. A. Arnold Jr.—p. 1599.
Analysis of Sanitary Facilities in United States. J. M. DallaValle and R. H. Britten.—p. 1604.
Present Status of State Cancer Control Programs. L. A. Scheele. —p. 1613.
Disabling Morbidity Among Industrial Workers, Second Quarter of 1942. W. M. Gafafer.—p. 1620.

57:1635-1678 (Oct. 30) 1942

Variation in Hospitalization with Size of City, Family Income and Other Environmental Factors: Based on Records for 9,000 Families in Eighteen States Visited Periodically for Twelve Months, 1928-1931. S. D. Collins.—p. 1635.

57:1679-1714 (Nov. 6) 1942

Summary of Census Data on Water Treatment Plants in the United States. S. R. Weibel.—p. 1679.
Contribution on Toxicity of Algae. R. E. Wheeler, J. B. Lackey and S. Schott.—p. 1695.

Carious Lesions in Molar Teeth of Hamsters.—Arnold's studies indicated that diets containing cereal, like those used to induce caries in rats, were also effective in hamsters. He determined whether the size of the cereal had the same etiologic influence on dental caries in hamsters as it does in rats. Carious lesions were not, as was the case in rats, dependent on the coarse particle cereal in the diet, as caries was most extensive in animals fed a finely ground cornmeal ration. This result suggests the possibility of adapting a strictly synthetic diet to the study of experimental caries in these animals. The two distinct types of lesions observed were caries in the pits and fissures of the occlusal area of the molar teeth and caries in the cervical portions of the proximal surfaces, mostly in the upper and lower first molars.

Quarterly J. Studies on Alcohol, New Haven, Conn.

3:165-344 (Sept.) 1942

Effect of Alcohol in Experimental Liver Cirrhosis. J. V. Lowry, L. L. Ashburn, F. S. Daft and W. H. Sebrell, Bethesda, Md.—p. 168.
Alcohol and Tuberculosis. E. Bogen, Olive View, Calif.—p. 176.
Alcoholism and Induction into Military Service. A. Myerson, Boston. —p. 204.
Alcohol Legislation and Taxation in Britain in Wartime. J. Y. Dent, London, England.—p. 221.
Alcohol and the War: Recent Proposals for Federal Legislation Controlling Use of Liquor. E. V. Rostow, New Haven, Conn.—p. 230.
Some Casual Data on Drinking Habits Among Two Strata of Civilian War Workers. J. Dollard, New Haven, Conn.—p. 236.
Alcohol Problem in Military Service. M. Moore, Boston.—p. 244.
Alcohol and the War: Some Implications of Expansion in War Industries. J. B. Fox, Boston.—p. 257.
Interpretation of Alcohol Consumption Rates, with Special Reference to Statistics of Wartime Consumption. E. M. Jellinek, New Haven, Conn.—p. 267.
Alcohol and the War Effort. H. F. Willkie, Louisville, Ky.—p. 281.
War and Wine Industry. H. A. Caddow, San Francisco.—p. 288.
Beer and Brewing in Nation at War. A. Griesedieck, New York. —p. 293.

Rocky Mountain Medical Journal, Denver

39:733-820 (Nov.) 1942

Modern Mexican Medicine. C. H. Darrow, Denver.—p. 750.
Acute Surgical Conditions of Abdomen. A. S. Jackson, Madison, Wis. —p. 756.
Subvesical (Vaginal) Fibroma: Case Report. W. G. Schulte and R. P. Middleton, Salt Lake City.—p. 762.
Virus Pneumonia. T. D. Cunningham, Denver.—p. 764.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:473-504 (Oct. 24) 1942

Some Aspects of Carditis. T. F. Cotton.—p. 473.
Reactions Following Transfusions of Stored Blood. R. A. Jones.—p. 476.
*Bagassosis: Industrial Lung Disease. L. I. M. Castleden and J. L. Hamilton-Paterson.—p. 478.
Intramural Intestinal Hemorrhage. D. Cromie.—p. 480.
Chronic Leg Ulcer in Myelogenous Reticulosis: Report of Case. C. J. Polson.—p. 481.

Bagassosis.—According to Castleden and Hamilton-Paterson, directly after machinery was installed for dry bale-breaking of bagasse (the waste of sugar cane after the sugar has been extracted), instances of respiratory illness began to appear among the laborers in the plant who fed the bales into the machine and the engineer who supervised its construction and running. Workers engaged in the cutting and trimming of finished bagasse boards were never affected. As soon as it was realized that the dust liberated at the initial stage of manufacture was injurious, measures to suppress it consisted of a water spray and a suction draft applied to the site of its generation. Since these measures were adopted no further cases have occurred. The clinical appearance of the patients suggests an acute inflammatory pulmonary disease with urgent and extreme dyspnea but with little or no febrile reaction. Although bagasse contains 5 to 7 per cent of silica, an amount capable of producing silicosis, the acute pneumonic phase of the illness was unlike any known form of silicosis previously described, and as men who at the final stage of the process were also exposed to a silica-containing dust but never became ill it seemed possible that an allergic factor might be responsible for the disease; that is, that the workers became sensitized to a protein present in the dust of bagasse. Extracts for skin tests were made and it was found that whole bagasse contains an antigen soluble in isotonic solution of sodium chloride to which workers who inhale the dust can become sensitized. The acute phase of bagassosis is possibly an allergic response of the lungs to this antigen with, but more probably without, an infective element. The chronic pathologic process might be due to a form of silicosis which supervenes on the allergic phase during or after the latter's resolution, a response on the part of the lungs to crystalline cellulose or a chronic process of fibrotic nature occurring in tissues edematous from their allergic response to the antigen. Attempts to reproduce the disease in animals have so far failed. The disease should be called bagassosis and not bagasscosis, as it has been.

Journal of Pathology and Bacteriology, Edinburgh

54:407-542 (Oct.) 1942

Development of Colors from Sulfonamides (*p*-Nitrobenzenesulfonamide) Under Bacterial Action and Bearing of Such Phenomena on Theory of Bacteriostatic and Bactericidal Activities of Sulfonamides. H. Burton, J. W. McLeod, Anna Mayr-Harting and N. Walker.—p. 407.
Effect of Surface Active Agents on Bacillus Proteus. I. Lominski and A. C. Lendrum.—p. 421.
Medium Showing Distinctive Green Coloration with Growths of Corynebacterium Diphtheriae Intermedius. M. Gordon and Constance Higginbottom.—p. 435.
Effect of Blood Charcoal on Growth of Tubercle Bacillus. E. Nassau.—p. 443.
Growth of Coliform Bacilli in Water Containing Various Organic Materials. J. H. Nelson.—p. 449.
*Aortic Size, Status Lymphaticus and Accidental Death. W. G. Millar and T. F. Ross.—p. 455.
Changes in Adhesiveness of Blood Platelets Following Parturition and Surgical Operations. Helen Payling Wright.—p. 461.
Selective Mediums for Organisms of Salmonella Group. R. Knox, P. G. H. Gell and M. R. Pollock.—p. 469.
Neoplastic Diseases of Testis in Animals. J. R. M. Innes.—p. 485.
Modified Leifson Mediums for Isolation of Bacillus Dysenteriae and Pathogenic Members of Colon Typhoid Group. J. Brodie.—p. 499.

Aortic Size and Accidental Death.—As the most constant characteristic of status lymphaticus appeared to be the narrowness of the aorta, Millar and Ross measured 300 consecutive aortas at necropsy to discover whether any connection exists between poor vascular development and frankly accidental death; that is, from causes which in themselves could not be of sufficient power to produce death in a normal subject. The measurements were studied in relation to age, body weight, height and sex. The mean size of the aorta, corrected for these four variants, of patients dying from accident is significantly lower. Evidence shows that this difference is due, not to dilatation of the aorta in disease, but to developmental hypoplasia of the arterial system in the fatal accident group. This hypoplasia is regarded as connected, probably indirectly, with liability to accident. Therefore arterial hypoplasia may be the most reliable guide to the existence of so-called status lymphaticus. In this sense status lymphaticus is regarded as an entity and one to which importance should be attached as a factor in sudden and unexpected death.

Medical Journal of Australia, Sydney

2:335-352 (Oct. 10) 1942

*Modern Treatment of Burns. A. D. Smith.—p. 335.
Id. F. M. Richardson.—p. 337.
Id. J. P. Ainslie.—p. 339.
Some Aspects of Pathology of Carcinomas of Biliary Tract. R. A. Willis.—p. 340.

Modern Treatment of Burns.—Richardson stresses the fact that in the modern treatment of burns the secondary physiologic change, water and protein loss secondary to burns, which heretofore has been neglected, must be recognized and replacement instituted. The two simple and speedy laboratory methods, the hematocrit value and protein value, are important in illustrating the trends in patients and in guiding therapy.

South African Journal Medical Sciences, Johannesburg

7:85-172 (July) 1942

Nicotinic Acid Excretion in Normal Men and in Cases of Vincent's Gingivitis. L. Goldberg and J. M. Thorp.—p. 85.
Survey of Vitamins in African Foodstuffs: I. Thiamine Content of Wheat. L. Goldberg and J. M. Thorp.—p. 95.
*Vitamin A Deficiency in Tuberculosis and Diabetes and Effect of Various Therapeutic Preparations. B. A. Dormer and M. Gibson.—p. 109.
Preimplantation Abortion in Elephantulus. C. J. van der Horst and J. Gillman.—p. 120.
Spontaneous Development of Deciduomas in Elephantulus. C. J. van der Horst and J. Gillman.—p. 127.
Critical Analysis of Early Gravid and Premenstrual Phenomena in Uterus of Elephantulus, Macaca and Human Female. C. J. van der Horst and J. Gillman.—p. 134.
Structure of Basal Granular Cell (Argentaffine) in Human (Bantu) Alimentary Canal, with Special Reference to Antianemic Factor. J. Gillman.—p. 144.
Rats as Vectors of Disease: Survey of Rats of Johannesburg. L. C. Harris and R. G. Saner.—p. 160.

Vitamin A Deficiency.—The Frober Faybor biophotometer test was used by Dormer and Gibson to determine the vitamin A deficiency in 92 apparently normal healthy young adults (university students), 86 tuberculosis sanatorium inmates (on a diet with an adequate amount of vitamin A for normal requirements), 10 persons suffering from diabetes and that of persons with a vitamin A deficiency after taking various preparations containing vitamin A. Of the first group the curve of 73 per cent was normal, of 16 per cent borderline and of 11 per cent subnormal. The respective figures for the tuberculous group were 43, 27 and 30 per cent. The curves of the 10 diabetic patients were all subnormal. All the subnormal curves of the college students could be explained by food fads or an inadequate intake of vitamin A. In the tuberculous group the deficiency was probably due to excessive metabolism and inefficient absorption. All patients whose vitamin A content had been raised felt better subjectively. The biophotometric reading of tuberculous persons cannot always be improved beyond the borderline; a maintenance dose must be given. Also in spite of large doses of concentrated vitamin A the curves of none of the diabetic patients ever reached normal levels. The metabolism (from absorption to transformation in the retina) of vitamin A is apparently interfered with in diabetes. Of the various vitamin A preparations used a sample of crude cod liver oil with a vitamin A content of 1,483 international units per gram appeared to have no effect in improving the biophotometric curve, but concentrates gave good results.

Cardiologia, Basel

6:57-168 (Nos. 2/3) 1942

*Benign Celothelioma: A Tumor Sui Generis of Atrioventricular Node with Heart Block. I. Mahaim.—p. 57.
Electrocardiographic Changes After Occlusion of Pulmonary Artery or Aorta. B. Kisch, A. A. Goldbloom and G. Zucker.—p. 83.
Contribution to the Problem of the Electrical Alternation of the Heart. B. Kisch.—p. 95.
Microscopic Structure of Coronary Vessels, Particularly the Occurrence of Autonomic Vascular Regions in Human Heart. S. Hirsch.—p. 105.
Human Electrocardiogram Derived Simultaneously from Left and Right Ventricle. G. Nylin and C. Crafoord.—p. 136.
Gallop Rhythm and Atrioventricular Dissociation. G. Dagnini.—p. 146.
Auricular Fibrillation in Course of Protracted Digitalis Therapy. E. Schill.—p. 165.

Celothelioma of Atrioventricular Node.—Mahaim's patient acquired pulmonary tuberculosis when she was 22. The following year there developed abdominal symptoms caused by an ovarian tumor which was considered inoperable. Necropsy disclosed the ulcerative type of pulmonary tuberculosis and epithelioma of the right ovary. There were no metastases in the internal organs. There was a tumor of the atrioventricular node which was identified as a celothelioma. This type of tumor was first described by Mönckeberg as a lymphoangioendothelioma. In reality the tumor is of embryonal origin. It develops from the epicardic celothelial cells (cover cells). The literature contains reports of only 5 similar cases. A review of the 4 cases reported respectively by Armstrong-Mönckeberg, Lloyd, Perry and Rogers, and Resek is presented.

Helvetica Medica Acta, Basel

9:217-346 (April) 1942. **Partial Index**

Etiology and Pathogenesis of Megacolon and Dolichocolon. J. A. Mathez.—p. 224.
*Studies on Respiration and Sickness at High Altitudes and on Respiratory Regulation. K. Lenggenhager.—p. 269.
Study of Function of Human Patella: Question Whether Its Presence Modifies Traction of Quadriceps on Tibia: Question of Usefulness. E. Duboux.—p. 331.
New Method of Determining Chloride Content in Blood Corpuscles. M. Duboux et C. Tschäppät.—p. 338.

Respiration and Sickness at High Altitudes.—Lenggenhager's extensive studies furnish arguments against the theory of carbon dioxide or hydrogen ion as regulators of respiration. Since carbon dioxide is the terminal product of combustion, its accumulation, according to the law of mass effect, must inhibit the utilization of oxygen. For this reason respiration in a given volume of air is possible longer when carbon dioxide is absorbed. Oxygen consumption is reduced when, in the presence of the breathing of air, carbon dioxide is accumulated. If there is an oversupply of oxygen in the blood, a high carbon dioxide content is tolerated. In the presence of deficient oxygen supply a less than normal carbon dioxide content is tolerated. If carbon dioxide had a direct stimulating effect on the respiratory center the respiratory volume would have to remain the same in the presence of various oxygen containing gas mixtures that have a constant carbon dioxide content; this, however is not the case. The alveolar carbon dioxide is noticeably higher in the presence of high than of low blood oxygen. The consumption of oxygen is made more difficult not only by carbon dioxide but also by severe acidosis (diabetic coma, acid intoxication and uremic coma). This could be a direct action of the hydrogen ion or an indirect effect of the metabolic carbon dioxide. On the other hand, every alkalosis improves the oxygen consumption either because of a reduction of the hydrogen ions or because of a decrease in carbon dioxide. It is possible that this factor explains the slight metabolic increase at moderately high altitudes. If the body loses too much carbon dioxide on account of hyperventilation, the tissues, particularly those of the brain, are gradually damaged by the resulting alkalosis. The respiratory center becomes less responsive. Anesthetized animals can be killed by passive hyperventilation. Respiration becomes deeper with increasing oxygen depletion if carbon dioxide is added to keep its content constant. The former explanation of the increase in the respiratory volume in oxygen deficient air by way of the formation of hypoxemic acids in the respiratory center or in the peripheral "chemoceptors" cannot be correct. Bohr's law which applies to blood in vitro plays a subordinate role in living tissues. High altitude sickness is probably caused not so much by oxygen deficiency as by the acute alkalosis. This view was supported by experiments in a low pressure chamber: At 9,000 meters addition of carbon dioxide to the inspiratory air completely counteracted the threatening symptoms. After alkalosis has acted on the brain tissues for a while the cerebral functions become more difficult. High altitude sickness presents the cumulative effect of impairment of the cerebral functions by alkalosis and oxygen deficiency.

Schweizerische medizinische Wochenschrift, Basel

72:581-608 (May 30) 1942. **Partial Index**

Meningiomas. A. Jentzer.—p. 581.
Factors of Ophthalmologic Diagnosis and Therapy Important for Practitioner. P. Knapp.—p. 586.
Practical Aspects of Lumbar Puncture and of Examination of Lumbar Fluid. M. Wieland.—p. 590.
*Relation Between Paget's Osteitis Deformans and Hyperthyroidism. E. Lyon.—p. 592.
Psoriasis and Lactoflavin. R. de Preux.—p. 596.

Paget's Osteitis Deformans and Hyperthyroidism.—According to Lyon the thyroid hormone exerts an important influence on the skeletal system. Hyperthyroidism is almost regularly accompanied by progressive osteoclastic bone atrophy. Osteitis deformans of Paget is less often encountered in hyperthyroidism. When the two disorders occur the question arises whether this association is accidental or whether there exists a causal connection. The author reports a case in which hyperthyroidism had existed for years. Paget's osteitis deformans had been demonstrated in the pelvis since 1934 and osteoporosis of the vertebral column in 1939. Paget's osteitis deformans is an osteoclastic bone atrophy with mass production of inferior bone. Its active stage is characterized by increased serum phosphatase, positive calcium balance, increase in the blood cholesterol and A hypovitaminosis, which readily yields to vitamin administration. A constitutional predisposition to osteoclastic bone atrophy is the underlying cause of Paget's osteitis deformans, and this predisposition is made manifest by A hypovitaminoses of various origins. Hyperthyroidism was responsible in the author's case. The therapy aims to transform the disease into the stage of remission. The cause of the vitamin A deficiency must first be ascertained and counteracted. In the reported case the hyperthyroidism was treated by roentgen irradiation. Prolonged and intensive treatment with vitamin A is indicated in all cases.

72:609-636 (June 6) 1942. **Partial Index**

Bronchial Asthma. O. Müller.—p. 609.
Virus and Virus Proteins. P. Ladewig.—p. 613.
*Electrocardiographic Records Under Influence of Digitalis. A. Sellmer.—p. 617.
Case of Adrenal Pheochromocytoma. P. Hahn.—p. 622.

Electrocardiographic Records Under Influence of Digitalis.—Sellmer studied the effects of digitalis on electrocardiograms of 60 patients with and without heart disease. His investigations concerned the minimal dose which produces digitalis effects, the time of its first appearance and the persistence of electrocardiographic changes. To obtain exact data, the majority of patients were subjected daily to electrocardiographic examinations and sometimes hourly tests were made. The quantities of digitalis administered and the duration of the medication varied greatly. Extremely small as well as large doses (0.1 to 6.4 Gm.) were administered for from one to forty-two days. Typical digitalis changes such as the lowering of the ST and the flattening of the T wave were observed after extremely small doses (0.1 to 0.5 Gm.) and usually in the course of the first three days, in exceptional cases after from one to several hours. The changes persisted for from five to forty days; the average time was two to three weeks. There was no essential difference between the reaction of the diseased and the healthy heart. The customary digitalis effects were observed also in the healthy heart. The individual differences in reaction were pronounced and must be ascribed to disparity in the susceptibility to digitalis.

An. Cáted. de Pat. y Clin. Tuberc., Buenos Aires

3:221-458 (Dec.) 1941. **Partial Index**

Sequels of Pulmonary Tuberculosis and Allergy to Tuberculin. R. F. Vaccarezza.—p. 221.
*Physicochemical Study of Serum Precipitation Reaction by Sulfuric Acid. F. Modern, J. A. Tabanera and G. Ruff.—p. 238.
Influence of Lateral Decubitus on Pulmonary Rest: Separate Functional Study of Each Lung. R. F. Vaccarezza, A. Lanari, A. E. Bence and F. Labourt.—p. 254.
Culture of Bacillus of Bovine Tuberculosis. A. R. Arena and A. Cetrángolo.—p. 268.
*Importance of Roentgenologic Examination of Thorax with Caudal and Cranial Direction of Rays. B. Enquin.—p. 287.
Experimental Tomography. G. Pollitzer and C. Lanari.—p. 312.
Extrapleural Pneumothorax. R. F. Vaccarezza, O. A. Vaccarezza and J. C. Rey.—p. 345.
Pulmonary Atelectasis by Aspiration of Residual Air. A. E. Bence and A. Lanari.—p. 372.
Pulmonary Pictures in Ocular Tuberculosis. R. F. Vaccarezza, B. Courtis and J. B. Gómez.—p. 392.
*Perforation of Tuberculous Ulcers of Intestine. C. E. Lamberti.—p. 397.
Postthoracoplastic Cavitary Gangrene. R. Consigliere and O. A. Vaccarezza.—p. 433.

Serum Precipitation by Sulfuric Acid.—Tabanera treats 0.2 cc. of human serum with 3 cc. of an 8⅓ per cent solution of sulfuric acid in twice distilled water. The blood is taken when the patient is fasting and with a dry sterilized syringe. The serum must not show signs of hemolysis. The test tubes are kept at a temperature of from 18 to 20 C. and the results can be read at the end of twenty-four hours. Normally, formation of a precipitate is observed (negative reaction). In certain morbid conditions such as tuberculosis, particularly with an intestinal localization, no precipitate is formed within a fixed time (positive reaction). In order to learn the nature of the precipitate normally obtained, color reactions were made to identify the amino acids. Other factors investigated were the isoelectric point of the precipitate, its relation to nitrogen, its protein fractions and the protective action of human serum on animal serum and other substances. The precipitate produces the positive reaction of amino acids, and the relation between its nitrogen and dry extract corresponds to the conversion of nitrogen to protein (6.25). Electrodialyzed serum is not precipitable with sulfuric acid. The pseudoglobulin of normal serum does not prevent precipitation, whereas the pseudoglobulin of serums with positive reaction have a great protective power and the increase of its quantity is proved by protein fractionation. The absence of precipitation (positive reaction) can be explained by the increase of the pseudoglobulin fraction or by the presence of a protective substance in it. The positive human serum protects the normal serum of man and of various animals the same as a hydroalcoholic solution of casein.

Roentgenologic Examination of Thorax with Caudal and Cranial Direction of Rays.—Enquin studied the value of the x-ray exploration of the thorax with cranial and caudal projection of the rays. These angles of projection permit the visualization in frontal exposure and are free from bony obstruction to the apical and subapical pulmonary fields, the two hili, particularly the left one, the anterior and posterior slopes of the diaphragm, the apex and the lower border of the heart. The pictures obtained with these projections differ greatly from those obtained with standard angles of projection. The theoretical foundations and the diagnostic value of these differences are discussed. The diagnostic value of the exposures described is often superior to that of tomography. These angles of projection are of particular importance for the examination of apical and subapical lesions and for the study of incisural and juxtaincisural processes and for the diagnosis of cavities.

Perforation of Tuberculous Ulcers of Intestine.—Lamberti reports that necropsies on 464 patients with pulmonary tuberculosis revealed ulcerative intestinal lesions in 258 (55.6 per cent). A perforation of the intestine was found in 9 cases: in 1.93 per cent of those with pulmonary tuberculosis and in 3.48 per cent of those with intestinal tuberculosis. The perforation was located in the ileum in 4 cases, in the ileum and appendix in 1 case and in the appendix in the 4 remaining cases. The clinical diagnosis was established in 7 cases which presented the symptomatology of a generalized peritonitis.

Bol. Oficina San. Panamericana, Washington, D. C.

21:955-1060 (Oct.) 1942. **Partial Index**

*Coconut Water as a Culture Medium. C. Picado T.—p. 960.

Coconut Water as a Culture Medium.—Picado T. directs attention to the value of coconut water as a culture medium. The war, with its interruption of transportation, has prevented many small laboratories from obtaining their usual supplies of culture mediums. San Juan de Dios Hospital has employed coconut water as a culture medium for the past twenty-five years. Coconut water contains magnesium, nitrogen, phosphorus, sodium, potassium, sulfur, zinc, iron, sucrose, calcium, aluminum and chlorine and closely resembles Raulin's liquid. The natural acid coconut water sterilized by boiling used as liquid or jelled serves as an excellent medium for the growth of fungi of human and plant mycoses, for industrial yeasts, for plant bacteria, for acidophilus bacilli, for the germination of orchids and for the development of fruit fly larvae. Bacteria pathogenic to man and animals require that the coconut water be alkalized. The economy of the medium in tropical countries is obvious.

Gaceta Médica de México, Mexico City

72:337-457 (Aug. 31) 1942. **Partial Index**

*Staining Treponema: Simple, Rapid and Reliable Technic. T. G. Perrín.—p. 404.
*Digitalis Lanata: Clinical Effects. S. Aceves.—p. 410.

Staining Treponema.—Dark field examination of Treponema, according to Perrín, has the disadvantage that the material cannot be preserved. With his method it is possible to stain Treponema either in fresh or in dried preparations. The reagent is prepared with 10 cc. of a 10 per cent formaldehyde solution, 4 cc. of Zielhl's fuchsin and 1 cc. of acetic acid. Fresh preparations may be stained with or without previous fixation. The slide is stained for two minutes if heat is used and for six minutes if heat is not used. It is then washed in distilled water, dried and observed under the oil immersion lens. Dried preparations are covered with a slide having a fine layer of balsam or of oil of cedar. The reagent can be used in staining nuclei and tissue sections. The author employed this technic for staining bacteria in serous exudate of a syphilitic chancre, in pus of maxillodental polyarthritis and in the lymph of dyschromic skin in experimental pinto. The technic proved to be rapid and reliable. Treponema stains uniformly and is clearly differentiated.

Digitalis Lanata.—Aceves treated 25 patients with decompensated heart disease by rest in bed, and diet, followed by administration of the glucosides of Digitalis lanata (digilanid). The drug was given intravenously or by mouth in a dose slightly larger than that of Digitalis purpurea. The effect of Digitalis lanata on the heart is similar to that of Digitalis purpurea. The drug corrects the insufficiency by increasing the contractility of the myocardium. The effects are rapid when the drug is administered intravenously. Adequate therapeutic doses are well tolerated for a long period. Larger doses of the drug may cause gastrointestinal and nervous disorders and changes in the electrocardiogram characteristic of digitalis intoxication.

Revista Clínica Española, Madrid

5:81-160 (April 30) 1942. **Partial Index**

Electroencephalography. J. Rof Carballo.—p. 81.
*Acute Perforations of Malignant Tumors of Stomach. A. García Barón.—p. 96.
*Studies on Casal's Disease: Constitution and Pellagra. M. Díaz-Rubio.—p. 101.
Continuous Aspiration in Gastric Surgery. R. Canals Mayner.—p. 105.
New Aspects of Indications in Treatment of Pulmonary Cavities. M. López Sendón.—p. 113.
Kidney of Pregnancy and Acid-Base Equilibrium. F. Orengo Díaz Del Castillo.—p. 123.
*New Method of Selective Staining of Rickettsias. M. Gracián Casado.—p. 127.

Acute Perforations of Malignant Gastric Tumors.—The rarity of acute perforations of malignant gastric tumors induced García Barón to report 3 such cases. The first patient had a primary carcinoma without a history of gastric disturbances. The first symptom was the perforation. The second patient had apparently an ulcer carcinoma. The third had a

sarcoma with a history of hyperacidity, of a subacute perforation leading to a subphrenic abscess and an apparent surgical cure which was followed within a few months by the development of a stenosing tumor, the sarcomatous nature of which was discovered by biopsy. Diagnosis of perforation was made in all cases before the operation, but in none was it recognized as cancerous. Aird reported in the *British Journal of Surgery* in 1935 79 cases culled from the literature. At the author's hospital there were four hundred ulcer perforations in twelve years, but only three cancer perforations. The male sex was predominant, 75 per cent of the 79 patients in the world literature and all 3 of the author's patients being men. Surgical treatment is indicated, for without it the patient is lost. The surgical mortality is approximately 68 per cent. The cancers are usually prepyloric. The intervention should be limited in the majority of cases to simple closure of the perforation, which in some cases is combined with a gastroenterostomy. Roentgenologic examination is valuable in the diagnosis because spontaneous pneumoperitoneum is often a pathognomonic sign of perforation.

Constitution and Pellagra.—Díaz-Rubio points out that when the etiology of pellagra is considered the pellagragenic diet generally receives most attention. Poor hygiene, physical and mental overwork, the concurrence of infections and intoxications and the seasonal factor are usually regarded as contributary factors, but a predisposition is not considered. The author cites factors which indicate the presence of a special predisposition or resistance for or against pellagra, the most important being existence of a familial pellagra, age, pregnancy and menopause, clinical multiformity, failure of the disease to develop in spite of a prolonged pellagragenic diet, cases of spontaneous cure in spite of the diet and failure of an early antipellagral diet in other cases. The basis of the predisposition is to be found in the endocrine system and in the constitutional habitus. The pellagral symptomatology is severe in asthenic and hypoplastic persons and is comparatively mild in persons with a pyknic build. The endocrine formula manifested by an increased functional tonus of thyroid and pancreas and by a deficient function of the anterior pituitary and of the adrenals and by a follicular predominance create a considerable susceptibility to pellagra, whereas in persons with the opposite endocrine formula the predisposition to pellagra is slight. The function of the adrenals seems to be the most important one among the endocrine elements that play a part in the pathogenesis of pellagra.

Selective Staining of Rickettsias.—Gracián Casado points out that the microscopic examination of materials containing rickettsias presents difficulties because of the extreme smallness of these parasites and because a differential stain is hard to obtain, particularly when the vitelline sac of the chicken embryo is used for the culture of rickettsia in the preparation of the antityphus vaccine. The following method was developed by the author: 1. Make a thin smear on a slide and let it dry well. 2. Without previous fixation cover the smear with xylene for three minutes. 3. Drain off the xylene and wash twice with 90 per cent alcohol. 4. Wash with water. 5. Cover the preparation for three minutes with a saturated solution of potassium bichromate. 6. Wash thoroughly with water. 7. Cover with a 10 per cent Giemsa solution from ten to twenty minutes. Wash with water, dry and examine. The preliminary treatment with xylene and bichromate stains the rickettsias intense red or dark blue on a colorless or slightly stained background. In the thicker parts of the preparation the micrometer screw makes it possible to see the well stained rickettsias in different planes. This method of staining clearly differentiates the rickettsias from cell and egg protein remnants.

Revista de Medicina y Cirugía de la Habana, Havana

47:434-390 (Aug. 31) 1942

*Acute Leukemia in Adults. O. Montoro.—p. 345.

Acute Leukemia in Adults.—Montoro points out that acute leukemia differs from chronic leukemia in its clinical and hematologic manifestations. The disease is rapidly fatal, its etiology unknown and its onset sudden. It is more frequent in children than in adults, in men than in women and during the menopause than at any other age for adult women. It is exceptionally rare in old persons. Pregnancy, abortion, infections and trauma to the spleen or bones can act as determining factors in the development of the disease, which may manifest itself in asthenic and febrile, agranulocytic, hemorrhagic, typhoid, neoplastic and comatose types and as typical acute leukemia. In all types, however, the number of immature cells is increased, although the peculiar type depends on the predominant type of immature cells. From the point of view of the predominant type of immature cells, acute leukemia in adults corresponds to any of the six different types, namely (1) the hemocytoblastic (2) the myeloblastic, (3) the paramyeloblastic, (4) the myelocytic, (5) the lymphoblastic and (6) the monoblastic. In all forms of acute leukemia the hemogram corresponds to any of the following changes in the blood or in the hemopoietic organs: (1) an acute increase of immature leukocytes, up to 85 per cent; (2) a subacute increase of immature leukocytes; (3) acute diminution of platelets; (4) normal or delayed coagulation time and prolonged time of hemorrhage; (5) resistant anemia of the normocytic or macrocytic type, of rapid development with globular values which vary from 1 to 1.2; (6) acute hyperplasia of the hemopoietic organs with predominance of myeloblastic, lymphoblastic and monocytic cells in the various forms of acute myelosis, acute lymphatic leukemia and acute monocytic leukemia. The oxidase reaction is of value in differentiating monoblasts and myeloblasts by showing certain characteristics of the monoblastic and myeloblastic granulations during the reaction. The presence of Auer's bodies in the hemogram is pathognomonic of the myeloblastic type of leukemia. The disease is fatal in one to three months. Treatment consists in the massive administration of liver, blood transfusions, arsenic preparations and symptomatic measures.

Revista Mexicana de Pediatría, México, D. F.

12:201-230 (June 10) 1942. **Partial Index**

*Infection Factor in Cholera in Infants: Sulfanilamide Therapy. J. Muñoz Turnbull.—p. 201.

Sulfanilamide Therapy in Cholera.—Muñoz Turnbull believes that infection is the predominant factor in cholera of infants and that dehydration and malnutrition are secondary. He treated successfully 5 cases with sulfanilamide. The drug was administered by mouth in doses of from 0.1 to 0.2 Gm. every five hours up to a daily dose of from 0.4 or 0.8 Gm. for two consecutive days, after which a dose of 0.1 Gm. was given every five hours up to a daily dose of 0.4 Gm. for two more days. The patients also were given intravenous injections of 140 cc. of a mixture of equal parts of Hartmann's solution and of 20 per cent dextrose solution and 10 per cent dextrose solution by mouth. All of the patients recovered.

Zentralblatt für Gynäkologie, Leipzig

65:1965-2012 (Nov. 8) 1941. **Partial Index**

*Corpus Luteum Action of Adrenal Cortex Extract on Mucosa of Uterus. O. Neumann.—p. 1968.

Quantitative Behavior of Estrogenic Substances in Intrauterine Death of Fetus. T. Koller and F. Leuthardt.—p. 1972.

New Breast Pump. H. O. Kleine.—p. 200.

Corpus Luteum Action of Adrenal Cortex Extract on Mucosa of Uterus.—Neumann cites factors which indicate close relationship between gonads and adrenal cortex. Progesterone action with desoxycorticosterone has been reported by a number of investigators and this is understandable in view of the close chemical relationship between progesterone and desoxycorticosterone. Since animal experiments had succeeded in transforming the uterine mucosa by means of desoxycorticosterone, an attempt was made to do the same in human subjects. Two castrated women were given in the course of fifteen days six doses of estrogenic substance. After their endometrium had been thus prepared they were given for a week daily injections of desoxycorticosterone acetate. The result was the development of the secretory phase of the uterine mucosa. Bleeding set in which resembled menstruation. To produce this transformation of the uterine mucosa approximately 300 mg. of desoxycorticosterone acetate was necessary. These large doses were well tolerated. Although the adrenals do not produce or contain sex hormones, their own hormone so closely resembles progesterone that in large doses it can produce the effects of the corpus luteum hormone.

Book Notices

Occupational Tumors and Allied Diseases. By W. C. Hueper, M.D., Assistant Director and Principal Pathologist, Warner Institute for Therapeutic Research, New York City. Cloth. Price, $8. Pp. 896. Springfield, Illinois & Baltimore: Charles C Thomas, 1942.

This volume includes essentially a review of the available medical literature dealing with tumors arising in industry. The author apologizes for the unevenness in the presentation of various aspects, which he feels is due to the fact that the amount of information available regarding each type of tumor varies. Following each section of the work is a bibliography indicating the sources that have been consulted in preparing the material. Obviously such a compilation is useful, since it fills a field not previously covered.

While most of the chapters are well written and conform with accepted views on the subject, the author contradicts himself in some in the evaluation of the statistics and papers which he reviews. In the chapter on arsenic he quotes statistics from England stating that there occurred "during the last five decades a total of seventeen arsenical cancers of the skin, of which four must be regarded as doubtful." This is an incidence of 1 case in three years, surely almost negligible. And yet the author concludes that the statement of Schwartz "that he had not seen a single case of occupational arsenical keratosis or epithelioma among the arsenic workers he examined" shows an "extraordinary immunity of American workers to arsenical malignancy" and that "actual evidence available presents a picture quite different."

The author's statement "that the United States has furnished not only the largest number of frank industrial arsenical cancers during the last ten years but seems to lead all other countries in the number of chronic arsenical dermatoses of occupational origin, according to the data recorded in the literature" is not borne out by the records of the industrial compensation boards. There is not 1 case of industrial arsenical cancer among all the records of the state compensation boards sent to the Section of Dermatoses Investigations of the United States Public Health Service during the last five years. That this is not due to the fact that reporting physicians overlook the skin lesions caused by arsenic exposure is evidenced by the many cases of occupational arsenical dermatitis which are reported.

Another example of faulty evaluation of the literature which might be due to lack of experience can be found on page 764. The majority of the authorities on melanin do not believe that melanin is found in the blood or urine under normal conditions. In discussing the incidence of pigmented epitheliomas among Negroes there must be a careful use of terms and consideration of differential diagnosis. Certainly no one has ever suggested that melanomas are of occupational origin. Besides, an occupational epithelioma in a Negro might very well be pigmented. The book contains other instances of such faulty reasoning.

On the whole, the special character of the book tends to give an exaggerated picture of the frequency of occupational cancers of the skin, since the data thus far available are hardly sufficient on which to make certain the differential diagnosis between occupational and nonoccupational tumors.

You Must Relax: A Practical Method of Reducing the Strains of Modern Living. By Edmund Jacobson, M.D. New edition. Cloth. Price, $1.75. Pp. 261, with 27 illustrations. New York & London: Whittlesey House, McGraw-Hill Book Company, Inc., 1942.

In the revised edition improvements have been made in style, and in the illustrations a shapely young woman replaces an indifferent looking man; in addition are a new chapter on war nerves and two new chapters on sleep; also an index. In the new material the author states that the basal metabolic rate is below normal when one consumes less oxygen and gives off more carbon dioxide. He also challenges the view that motility during sleep is a normal phenomenon. Essentially the author's thesis is unchanged: there is a difference between "ordinary" and cultivated relaxation. "The additional relaxation . . . is slight indeed. Yet this slight advance is precisely what is needed." Although the volume is intended for "persons who lack opportunity for medical consultation on matters of tension and relaxation," the patient, without help from the physician, "is often mistaken as to whether he has been successful and consequently may fall into wrong habits of tension." But where, aside from Dr. Jacobson, is the physician who can help him? The criticism made in the review of the first edition of this book (THE JOURNAL, July 21, 1934, p. 210) that "the book would be of great practical value if the author had already succeeded in 'selling' his theory and practice of progressive relaxation to the medical profession and now wished to tell the lay public what it was all about" is justified more than ever by the failure of the author to secure general acceptance for the detail of his therapeutic method in the intervening eight years.

Introduction to the Psychoanalytic Theory of the Libido. By Richard Sterba, M.D. Nervous and Mental Disease Monographs, No. 68. Boards. Price, $2. Pp. 81. New York: Nervous and Mental Disease Monographs, 1942.

This monograph represents a condensed, simplified review of Freud's theory of instincts. The criticism has been voiced that it is oversimplified and that further elaboration of Freud's original theories, which are quite generally accepted by progressive psychoanalysts, should have been included in the presentation. The title of the book, however, indicates that only an introduction to the study of instincts is intended. It is certainly true, as the author states in the preface, that "psychoanalysis, successful as a therapy and increasingly accepted by science as it is, has nevertheless to face a real danger nowadays. An attempt is being made by some analysts to teach and practice psychoanalysis without acknowledging the fundamentals of Freud's theory of instincts. . . . In their papers they try to deal with the problems of the mind in general and of neurosis in particular, without taking into account the instinctual forces, those gigantic powers discovered by Freud, which operate behind the mental manifestations of mankind. For these instinctual forces they substitute cultural influences in order to explain neuroses, and they regard themselves as being advanced in comparison with Freud and his theory of instincts. The public is impressed. Once more they spare the polite world the recognition of the 'all powerful melody of the instinctual forces,' just as did Adler and Jung thirty years ago. It seems timely, therefore, to recapitulate Freud's findings in the domain of the instincts, and particularly of the sexual instinct." This book is instructive and easy to read. Dr. Sterba expresses in simple, understandable language a sound fundamental condensation of acceptable, and for the most part accepted, theory of the libido.

Personality and Sexuality of the Physically Handicapped Woman. By Carney Landis, Ph.D., Associate Professor of Psychology, Columbia University, New York, and M. Marjorie Bolles, Ph.D., Research Fellow, Psychiatric Institute and Hospital, New York. Cloth. Price, $3. Pp. 171. New York & London: Paul B. Hoeber, Inc., 1942.

In this book the authors report a study of the psychosexual development of 100 physically handicapped women. The subjects were 25 women with an orthopedic disability, 25 with spastic paralysis, 25 with chronic heart disease and 25 who had been diagnosed as epileptic. The information was obtained by means of a controlled interview, a medical history and the Rorschach test. On the basis of this information the authors concluded that personality manifestations and disturbances do not correlate with specific physical disturbances. They found that any persistent physical handicap resulted in hyposexuality and psychologic immaturity. They also concluded that in most cases psychosexuality was not an important component in personality formation. Their findings showed that no existent psychologic or psychiatric theory could be used to explain the growth of personality and sexuality of the physically handicapped woman. They therefore concluded that the reaction tendencies which become formalized in childhood determine the later personality. A temporary physical defect causes the same type of reaction as a permanent defect. In those who recover from physical defects, personality and sexuality may develop normally. For example, personality deviations and psychosexual immaturity are found in normal women who have had frequent illnesses during childhood.

The book is well written and the material is clearly presented. The details of the findings and the various scales which were used are given in the appendix. The distribution of case

materials is not adequate, however, for the sweeping conclusions. No details are given by the authors regarding the distribution of the severity of the physical defects. One might infer that all the cardiac cases represented mild heart conditions or possibly individuals with very serious cardiac conditions. The authors state that the women were intensely interested in the project and volunteered their service and therefore were honest, and their answers fully represented their attitudes. This is only problematic, however, for every psychiatrist knows how difficult it is to obtain the true attitudes of a patient in spite of his professed willingness to tell everything about himself.

Effects of Alcohol on the Individual, A Critical Exposition of Present Knowledge. Volume I: Alcohol Addiction and Chronic Alcoholism. Edited on Behalf of the Scientific Committee of the Research Council on Problems of Alcohol by E. M. Jellinek. Cloth. Price, $4. Pp. 336. New Haven: Yale University Press; London: Oxford University Press, 1942.

This is the first volume of three, outlined in the introduction, proposing the independent and unbiased study of the medical and sociological aspects of alcohol. The present volume is given over chiefly to a discussion of the clinical aspects of the problem of alcohol and the clinical effects of its prolonged ingestion. It is divided into two parts. Part I contains chapters on alcohol addiction and its treatment by Karl Bowman and E. M. Jellinek, and on alcoholic mental disorders by the same authors. These are excellent and comprehensive reviews of the subjects. Probably nowhere in the literature is the subject of alcoholic mental disorders so clearly presented as in this chapter. Part II contains chapters on vitamin deficiencies in chronic alcoholism by Norman Jolliffe, on alcoholic encephalopathies and nutrition by Norman Jolliffe, Herman Wortis and Martin Steine, on Marchiafava's disease by Giorgio Lolli and on cirrhosis of the liver by Norman Jolliffe and E. M. Jellinek. While this section does not make such easy reading as part I, owing to the diversity of the subjects and the differences in the style of its writers, it is well up to standard. To devote an entire chapter to so rare and obscure an entity as Marchiafava's disease seems a little out of proportion, but this is a minor point of criticism. The bibliography is exhaustive and constitutes no small part of the value of the book. The authors are to be congratulated on their objective point of view, and it is only in rare instances that any personal scientific prejudice has shown itself. Both the scientific committee and the authors are to be congratulated on producing a volume which may well serve "students of the problems of alcohol as an authoritative work of reference."

Lymph Node Metastases: Incidence and Surgical Treatment in Neoplastic Disease. By Grantley Walder Taylor, A.B., M.D., F.A.C.S., Instructor in Surgery, Harvard Medical School, Boston, and Ira Theodore Nathanson, M.S., M.D., Instructor in Surgery, Harvard Medical School. With a foreword by Shields Warren, M.D., Assistant Professor of Pathology, Harvard Medical School. Cloth. Price, $8. Pp. 498, with 61 illustrations. New York, Toronto & London: Oxford University Press, 1942.

This book presents the results of a study of lymph node metastasis in cancer and its treatment. The first part describes the anatomy of the lymphatic drainage of the neck, the axilla and arm, the groin, the pelvis and abdomen, and the thorax. The second part deals with regional lymph node metastasis and is based on an analysis of some 5,500 cases, almost all of carcinoma, treated in the Massachusetts General, the Huntington Memorial and the Pondville hospitals. The cases in each part of the body have been studied with respect to secondary lymph node involvement, which occurred in about half of the cases observed, roughly averaged. Answers are recorded to questions like these: The location, duration, size, grade and control of the primary carcinoma? The particular nodes involved? The time and curability of lymph node metastases? Details are summarized clearly in the text and in one hundred and seventeen tables. In the third part the surgical removal of lymph node metastases is considered. Dissections of the cervical, axillary and inguinal lymph nodes and other operative procedures are described. At the end of each chapter are listed references to the publications discussed in the text. The drawings illustrate nicely lymph nodes, lymphatic drainage systems and dissections. The indexes, subject and author, seem to be complete. The book is the outcome of extensive and thorough work. It will be of interest and aid to all who are concerned with the diagnosis and treatment of cancer, to the literature of which it is an important and substantial addition.

Chronic Pulmonary Disease in South Wales Coalminers: I. Medical Studies. A. Report by the Committee on Industrial Pulmonary Disease. B. Medical Survey. By P. D'Arcy Hart and E. A. Aslett, with contributions by D. Hicks and R. Yates. C. Pathological Report. By T. H. Belt with assistance from A. A. Ferris. Medical Research Council Special Report Series, No. 243. Boards. Price, 10s. 6d. Pp. 222, with illustrations. London: His Majesty's Stationery Office, 1942.

This is an excellent report representing clinical and pathologic investigation into the unusual incidence of certified silicosis in South Wales. Students of the subject will be interested in the use of the new term "reticulation" in the classification of x-ray patterns. There is sound justification for this use since the modified form of silicosis with which these observers dealt definitely differs from others produced by most of the mineral mixtures. Belt makes out an excellent case for this terminology pathologically as well. In order to grant compensation in certain cases in which apparently disablement exists without x-ray evidence of nodulation, all these cases are classified under the heading "the pneumoconiosis of coal miners." The whole method of presentation is most impressive. Cuts are good and the argument is clear and forceful. Presumably, final judgment on the conclusions reached will need to await the provision of data on conditions of exposure, which evidently will be the subject of a subsequent report.

Civilian Health in Wartime. By Francis R. Dieuaide, M.D., Associate Professor of Medicine, Harvard Medical School, Massachusetts General Hospital, Boston. Cloth. Price, $2.50. Pp. 328. Cambridge, Mass.: Harvard University Press; London: Oxford University Press, 1942.

This book is easy to read and gives sound information on the subject of civilian health. The chapters on nutrition and diet make excellent reading and give dependable information. Of special interest is the statement concerning concentrated diets, which the public is led to believe make the "German armies invincible." The author states "It is notable that German soldiers immediately ransack the restaurants and larders of newly occupied territory with an avidity which has greatly impressed American correspondents." Especially pertinent at this time is the chapter entitled "About Our Doctors and Nurses." The list at the end of the book for additional reading is worth while.

Group Differences in Urban Fertility: A Study Derived from the National Health Survey. By Clyde V. Kiser. Cloth. Price, $2.50. Pp. 284, with 50 illustrations. Baltimore: Williams & Wilkins Company, 1942.

Interest in population facts and population trends has reached a peak in recent years. Most of the facts of population distribution now are quite accurately determined by the decennial census; the projection of probable population trends into the future and the interpretation of their meanings are being subjected to searching study by a considerable group of qualified investigators. This book deals primarily with the fertility rate in urban areas and the various factors which affect it, such as occupation, educational attainment and family income. The conclusions are not particularly astonishing to any one who has been familiar with recent investigations in the field. It has been well known for some time, for example, that large urban populations in this country do not reproduce themselves. Nevertheless this book represents a careful documentation and interpretation by one of the leading workers in the field. Sound fundamental information of this nature is necessary if work in the social field is ever to reach the stature of a true science.

Manual of War-Time Hygiene. By Dean Franklin Smiley, A.B., M.D., Professor of Hygiene and Preventive Medicine in Cornell University, New York, and Adrian Gordon Gould, Ph.B., M.D., Attending Physician and Assistant Professor of Hygiene and Preventive Medicine in Cornell University. Supplement to A College Textbook of Hygiene. Paper. Price, $1. Pp. 86, with 11 illustrations. New York: Macmillan Company, 1942.

This small book is intended as a supplement to "A College Textbook of Hygiene" by the same authors. It is divided into three parts, on military hygiene, civilian defense and wartime first aid. The authors believe that in wartime the college student's work in hygiene must be considerably reoriented. Personal hygiene will have increased importance because the student is fitting himself for the health of men in the armed forces. Community hygiene must, in these wartimes, deal largely with problems of field sanitation and military organization for combating infectious disease, wounds and gassing. This booklet can be recommended as a supplement to the author's college textbook on hygiene.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HYPNOTISM AS THERAPEUTIC PROCEDURE

To the Editor:—Will you please inform me about the present status of hypnotism as a therapeutic procedure? Is there any actual danger in its indiscriminate use by laymen? Please suggest bibliographic references on the subject.

M.D., Puerto Rico.

ANSWER.—Hypnotism suffered the fate of other methods of therapy which have become associated with charlatanism and which have been hailed with undue enthusiasm. It fell into disrepute with physicians because, unlike psychoanalysis, it deals largely with symptoms rather than causes. It is essentially for this reason that this valuable therapeutic technic may be dangerous in the hands of the public, for symptoms may be created or intensified without a proper knowledge of the underlying pathologic condition. All physicians are aware of the power of suggestion, and in the state of hypnosis conscious resistance is reduced to a minimum. The patient is put in a condition of heightened suggestibility and he accepts suggestions without criticism.

One of the greatest obstacles in psychotherapy is to get the patient to accept therapeutic suggestions consciously. Under hypnosis it is possible to implant therapeutic ideas on the "subconscious" and to have them take effect when endless numbers of suggestions given in the waking state would be ignored or even actively resisted. Also under hypnosis former dissociated experiences and amnesic material can be rendered available for reassociation and reorganization. Of course, like any form of psychotherapy, the results of hypnosis are individually limited, and they vary in degree and variety with every subject, depending on the innate endowment of the patient.

The mechanism of normal sleep and that of hypnosis are the same. Normal sleep, like hypnosis, is a condition of dissociation. In fact, the physician can frequently influence by suggestion a normally sleeping person and transport him into hypnosis without awakening him. All persons are in a condition of hypotaxis, or dissociation, during the course of normal sleep and confuse dream thoughts with actual occurrences. It is for this reason that sleep is advantageous for the application of suggestion.

Some of the compulsion neuroses and the hallucinations of the psychoses may be explained on heightened suggestibility. Spontaneous hypnosis has been known to occur and to be mistaken for absentmindedness, spontaneous trance, the loss of identity or the amnesia found in the hysteroid epileptic. Just as these psychopathologic symptoms have occurred, so they may be removed by the same process.

The physician who wishes to use hypnosis must know how to convince his patient that he is capable of doing so, and he must be able more or less to induce an enthusiasm for this form of treatment. Thus the practitioner must either be convinced himself or, failing this, possess a dramatic personality in order to convince others. Everything which fills a person with enthusiasm gains control over his brain activity, easily conquers all the contrary impressions and leads the person into receptivity. Therefore the hypnotizability of a person increases with his enthusiasm and with his confidence as well as with the enthusiasm and former success of the practitioner.

As will be evident from the following bibliography, hypnosis has a definite place in psychotherapy. It is not a mysterious art, but a scientific technic.

McCartney, J. L.: Hypnosis: A Rational Form of Psychotherapy in the Treatment of the Psychoneuroses, *J. Nerv. & Ment. Dis.* **86**: 405 (Oct.) 1937.

McCartney, J. L.: Psychotherapy, with Special Reference to the Use of Hypnosis, *Ann. Int. Med.* **12**: 1279 (Feb.) 1939.

Schilder, Paul, and Kauders, Otto: Hypnosis, New York, Nervous and Mental Disease Publishing Company, 1927.

Cannon, Alexander: The Science of Hypnotism, New York, E. P. Dutton & Co., 1937.

Banister, Harry: Psychology and Health, New York, Macmillan Company, 1935.

ROENTGENOGRAPHY IN DIAGNOSIS OF AORTITIS—POSITIVE WASSERMANN TEST IN LATE SYPHILIS

To the Editor:—A man aged 50, 6 feet 2 inches (188 cm.) tall, weight 180 pounds (82 Kg.), had been active and in excellent health. In February 1940 he fractured a fibula in an accident. While in a hospital for treatment of the fracture, he was found through routine blood examination to have a strongly positive Wassermann reaction. He did not remember ever having had primary or secondary lesions of syphilis. Careful physical and neurologic examinations with syphilis in mind disclosed nothing but, perhaps, some increased dulness across the aortic area. The spinal fluid was not examined. The report on the x-ray examination of the cardiac area was "Transverse diameter of heart 13.3 cm., aorta 8.2 cm., dilatation of transverse arch of aorta typical of syphilitic aortitis." Two other Wassermann tests were done by different laboratories, and they too were reported strongly positive. It was explained to the patient that he had a syphilitic infection of perhaps twenty years' duration which, although latent, had damaged his aorta, and that he now had an early aneurysm. Treatment was started immediately by weekly injections of a bismuth compound, of which he received fifteen, followed by twelve of neoarsphenamine in 0.3 Gm. doses, which was increased to 0.45 Gm., as it was well tolerated. This was followed by twenty-three injections of the bismuth compound, after which came ten injections of neoarsphenamine, beginning with 0.45 Gm., increased to 0.6 Gm., as the Wassermann reaction was still strongly positive. He then was given fifteen injections of the bismuth compound followed by fifteen injections of bismarsen. All these injections were given at weekly intervals. Thus, in one year and eleven months of continuous treatment he received fifty-three injections of bismuth preparations and thirty-seven of arsenicals. The Wassermann reaction was strongly positive. He was given a six months rest for business reasons; he still felt well and had no symptoms at all attributable to his heart. He played golf and hunted, and he was in perfect health. This year he has received a bismuth compound intramuscularly at intervals of two weeks. He still feels well and still has strongly positive Wassermann and Kahn reactions. He has received regularly every six months an x-ray examination with the same technic as the first examination. At the end of one year's treatment the report was "No further dilatation of any part of aortic arch. Heart not enlarged. Successful arrest of syphilitic aortitis." At the end of 1942 the report was "Transverse diameter of heart 14 cm., aorta 8.8 cm., the difference in measurements from 1940 of questionable significance. Impression: relatively unchanged aortitis over period February 1940 to November 1942." The man is in excellent health, except that he still has a positive Wassermann and Kahn reaction. Treatment has not changed the size of his aorta. What should be the further treatment?

M.D., Georgia.

ANSWER.—The diagnosis of uncomplicated syphilitic aortitis cannot be made on the basis of posteroanterior teleroentgenography alone. An aortic width of 8.2 cm. demonstrated by this x-ray technic is not at all uncommon in nonsyphilitic persons 50 years of age or older. For a discussion of the importance of this point see Kemp, J. E., and Cochems, K. D.: Studies in Cardiovascular Syphilis: I. Teleroentgenography in the Diagnosis of Early Syphilitic Aortitis: A Comparison of Findings in 1,000 Syphilitic and 600 Non-Syphilitic Individuals, *Am. Heart J.* **13**:297 (March) 1937. Arteriosclerosis and hypertension, either one alone or in combination, will produce this degree of widening of the supracardiac shadow; and indeed as much as this may be expected as a physiologic process in a certain proportion of elderly persons.

The diagnosis of uncomplicated aortitis cannot be made in any case on the basis of x-ray findings alone, whether the teleroentgenographic technic includes, as in this instance, only posteroanterior roentgenography or the more desirable fluoroscopic and teleroentgenographic examination in the left anterior oblique position. The latter permits a demonstration of the silhouette of the aorta and is a much more accurate measure of aortic dilatation and its localization as contrasted with the aortic elongation and tortuosity accompanying arteriosclerosis or advancing age than is the technic employed in this case. Essential for the diagnosis of syphilitic aortitis, in addition to x-ray evidence of aortic widening, is the presence of symptoms, physical signs or both. The most important physical signs, in the absence of hypertension, are a rough systolic murmur in the aortic area and a tympanitic bell-like tambour accentuation of the second aortic sound. In this case it is distinctly stated that the physical findings were normal.

The term "aneurysm" is certainly an unjustifiable diagnosis in this case unless actual sacculation has been demonstrated. This does not appear to have been done.

This patient has had enough antisyphilitic treatment. In the absence of symptoms or physical signs of cardiovascular disease, the positive serologic test in the blood may be disregarded. Seroresistance in this situation, i. e. late syphilis, is the rule rather than the exception and is not of importance in prognosis.

GREEN DISCOLORATION BETWEEN TOES

To the Editor:—A girl aged 18 has a green pigment occurring between the layers of skin between the toes of both feet. There is no irritation of the skin and no scaling or any other pathologic condition noted. The family history is negative, and the patient's past history is negative except that she has sinusitis. For this she has been using only salt water in the nose and has been taking no drugs. The urine is negative for albumin and sugar, and the Wassermann reaction is negative. This condition has been coming on since August 1942, and I should like to know what could possibly be the cause. No local applications of any sort, including talcum powder, have been used, and there is no sign of dye on her hose or in her shoes.

Robert S. McCeney, M.D., Laurel, Md.

ANSWER.—Except for the temporary green color seen during the absorption of hemorrhage into or beneath the skin, green discoloration of the skin is seldom seen. There are few references to it in the literature. The principal possibilities are (1) dye from the stockings or shoes, (2) dye applied by the patient with intent to deceive, (3) color produced by the growth of some bacterium or fungus or (4) excretion of copper in the sweat.

1. The statement in the query that no dye has been found on the stockings or shoes makes this explanation unlikely. Stains between the toes without any discoloration on the dorsum of the feet or on the soles would be possible only if the dye was easily washed off and the patient carefully refrained from washing between the toes.

2. In all cases difficult of explanation, this possibility should be carefully considered.

3. Unless there is a chance that copper has been absorbed in large amount, the theory that the color was produced by fungous growth seems the best. Scrapings from the discolored areas should be stained and examined directly, and other specimens should be examined in the moist condition, preferably in potassium hydroxide solution, from 10 to 40 per cent strength, depending on the thickness of the specimen if shreds of skin are included. Cultures should be made on suitable mediums for growth of bacteria or higher fungi.

4. Stains of the skin and hair by the dust of copper and certain salts of chromium are common among workers in these metals, as mentioned by Schwarz and Tulipan (Occupational Diseases of the Skin, Philadelphia, Lea & Febiger, 1939, p. 728). White (R. Prosser: The Dermatergoses, ed. 4, London, H. K. Lewis & Co., 1934, p. 67) also mentions the use of copper in some hair dyes, in paints, especially those intended for use on metals, and in the fixers of color in cotton goods.

Less common are cases of green sweat. Clapton (Cases of Copper Poisoning Occurring Among the Outpatients of St Thomas's Hospital, *M. Times & Gaz.*, June 20, 1868, p. 658) noted in addition to green sweat staining the clothing, especially after a hot bath, that these patients showed a green line on the gums next to the teeth and extending a short distance on the teeth. His patients, besides coppersmiths, included a sailor who had been given lemon juice kept in a copper tank and a girl who used Scheele's green, copper arsenite, in making artificial flowers.

No record of any case of green discoloration between the toes has been found.

REMOTE TRAUMA AND DETACHMENT OF RETINA

To the Editor:—I have a case of retinal detachment, which is of the flat detachment type with disinsertion at the ora serrata. There is a question as to whether it can be due to an injury received. The injury consisted in the patient's head having come in contact with a solid brick wall or with a shelf which was placed firmly against the wall. There were mild concussion symptoms following the injury for several weeks. As far as has been ascertained, there was no preexisting disease in the eye. The refractive error in the eye before the accident was minus 3.25 with plus 3.00 cylinder axis 65 with no appreciable change following the accident. I should like to have an opinion, if possible, as to whether this case might be considered as of traumatic origin. The insurance company in this case has offered about one half of the amount that would normally be due on the policy as a compromise on what it terms as pay for the damage allegedly suffered from the concussion.

Mallory P. Weems, Captain, M. C., A. U. S.

ANSWER.—This is one of the hardest questions that can be put to an ophthalmologist and ranks with a similar question as to the possible traumatic etiology of an interstitial keratitis in the presence of a positive Wassermann reaction.

Remote trauma, as in the instance cited, undoubtedly can and does play a role in the production of detachment of the retina, probably acting as the exciting mechanism in a diseased eye. The following quotation from Duke-Elder expresses the consensus on this subject:

"To a very large extent, these indirect injuries, which are usually small, act not as a primary cause of detachment but merely as the precipitating agent in an eye already prone to this accident: as we shall see later, the sudden strain determines the formation of a tear in the retina after other factors, such as degenerative or inflammatory processes, have produced a region of weakness. In this sense, by acting as a trigger in starting a chain of events which have already been predetermined by other and more fundamental factors, minor and indirect traumas figure very constantly in the etiology of the condition. . . .

"One point noteworthy in connection with contusions as an etiologic factor is the possibility of a considerable interval elapsing between the receipt of an injury and the recognition of symptoms. The occurrence of a delayed detachment may be due to several reasons, but probably the most common is that the retina is torn at the time of the accident but does not become detached or so extensively detached as to attract notice until some time has elapsed."

It must be noted that this deals only with indirect traumas. Direct trauma to the eye itself with subsequent detachment is another question.

PARAFFIN-SULFANILAMIDE TREATMENT OF BURNS

To the Editor:—Under the auspices of the Office of Civilian Defense, a course in the treatment of war injuries has recently been given in the Los Angeles area. The local treatment of burns advised in this course was powdered sulfanilamide in paraffin. The prescription follows:

Paraffin wax	670 Gm.
Petrolatum	250 Gm.
Liquid petrolatum (heavy)	150 cc.
Cod liver oil	50 cc.
Sulfanilamide powder	50 Gm.
Menthol	1 Gm.
Camphor	1 Gm.
Oil of eucalyptol	1 cc.

It was advised that this material be heated in a water bath and sprayed on burned areas without any preliminary cleansing or débridement. It was further stated that this form of therapy had been widely used in industrial plants and was the accepted treatment of burns in the Naval Hospital, Mare Island. It was assumed that this form of treatment had the acceptance of the Office of Civilian Defense. If this treatment is efficacious there is no question of its adoption, but I have been unable to find reference to its use or any attempt to compare it with other more usual local treatments of burns such as tannic acid either alone or in conjunction with silver nitrate, gentian violet or the triple dye application. Further, it was my belief that at least reasonable cleaning of burned areas was as much a factor in the prevention of subsequent infection as was the local application of medicaments. An obvious theoretical objection to the paraffin wax and sulfanilamide treatment is that most of the sulfanilamide will remain suspended in an inert medium (paraffin), where it will be unable to exert any bacteriostatic or bactericidal effect. Furthermore, it is my belief that paraffin and various oils have been used extensively in the past in the local treatment of burns and that most of these treatments had been discarded because of the superior results obtained from tanning agents or in some instances from wet dressings alone. I would appreciate any references to articles on this subject (paraffin and sulfanilamide spray), and also would like to know how extensively it has been used in industrial plants and with what results.

Kenneth B. Olson, M.D., Olive View, Calif.

ANSWER.—The form of burn therapy cited in the query is a modification of the ambrine and paraffin methods used since the time of the last war. Ambrine is a patented paraffin preparation introduced by Barthe de Sandfort in 1914. As the formula was kept secret, several other paraffin preparations have been used since. Sherman (W. O.: The Paraffin-Wax or Closed Method of Treatment of Burns, *Surg., Gynec. & Obst.* **26**:450 [April] 1918) remains to the present day an earnest supporter of the paraffin method of burn treatment, stating that he and his staff have treated over 100,000 cases in this manner at the Carnegie Steel Company, Pittsburgh. Few others, however, have continued this type of therapy since the close of the first world war despite the vogue that it enjoyed at that time.

An appraisal of any method of burn treatment is difficult because of many variables. These include the nature, extent, depth and duration (time after the burn when treatment is applied) of the particular burns involved. It would seem that the fourth variable (duration of the burn) would be the one most appropriate to a consideration of the cases treated at Mare Island. Reports in the popular press indicate that many of these burns were old, having already passed the initial period with its shock and other attendant dangers. These cases would therefore have reached the stage where tanning agents and certain other definitive treatments would not be applicable anyway. To appraise a type of treatment accurately, a series of cases of fresh burns should be treated with the method and the series controlled with regard to all the variables listed.

It would seem likely that there would be only minimal absorption from or local action of sulfanilamide suspended in paraffin. Sulfonamides or cod liver oil have little proved specific advantage over a simple bland petrolatum dressing with careful preliminary cleansing and pressure as advocated by Koch (Siler, V. E., and Reid, M. R.: Clinical and Experimental Studies with

the Koch Method of the Treatment of Heat Burns, *Ann. Surg.* **115**:1106 [June] 1942). Furthermore, while the Mare Island treatment may not take so long to apply, the daily reapplications will certainly take as much time in the end as sealed methods (tanning or Koch petrolatum pressure) which require no change for at least ten days to two weeks. It is also difficult to see how any remedy for fresh burns can be useful which does not depend on a thorough preliminary cleansing of the wound as is especially advised by Koch. Since this is less essential—and in fact even useless—in old burns, perhaps this may explain the apparent success of some of the Mare Island cases.

In conclusion, it can be stated that this method presents only slight apparent practical advantages over the standard paraffin treatment. The most recent recommendations of the National Research Council (*War Med.* **1**:334 [March] 1942) make no mention of either the original or the revised form of paraffin application. Finally, before being condemned or accepted, the treatment should be tried on a controlled series of burns and contrasted with other methods in popular use.

CHILOMASTIX IN INTESTINES

To the Editor:—**A man aged 57 with symptoms of chronic appendicitis was found to have an eosinophil count of 7 per cent. This, with the history of having worked in the Philippine Islands for four years, led to a thorough study of the intestinal tract. After a saline purge, Chilomastix mesnili was found in the third and fourth stools. Even though amebas could not be found, the patient was treated with emetine hydrochloride and carbarsone for ten days and placed on a high protein diet. After a rest period his appendix was removed. Six weeks later, stool examination was repeated and Chilomastix mesnili was still present in the third and fourth stools. All available literature has revealed little or nothing about the pathogenicity and method of eradication of these organisms. Will you please give an outline of methods used for the eradication of intestinal Flagellata?**

James C. Coffey, M.D., Salisbury, N. C.

ANSWER.—Chilomastix inhabits the colon of man. It does not invade the tissues. Although it is often found in the presence of diarrhea, it is more often found in the absence of symptoms. It is possibly the cause of diarrhea when present in huge numbers. It is doubtful that it had any pathologic significance in relation to the chronic appendicitis in the case cited. Carbarsone has apparently been responsible for the removal of this infection in a few cases. It can be given by mouth in doses of 0.25 Gm. four times a day for seven to ten days. This is twice the usually recommended dose for amebiasis, but the drug can be used in this dosage for either infection with practically no fear of toxic symptoms. The elimination of carbohydrates from the diet also assists in reducing and possibly eliminating Chilomastix. The same regimen of treatment may eliminate Trichomonas hominis, which also inhabits the colon. Giardia, which inhabits the duodenum and jejunum, is not affected by the treatment outlined but can often be eliminated by atabrine dihydrochloride 0.1 Gm. two or three times a day by mouth after meals for three to five days.

AIR STERILIZATION WITH GLYCOL VAPORS

To the Editor:—**A newspaper publisher has just asked me about a spray containing a small portion of one of the glycols which, so he heard, might be incorporated into the humidifying system of the building, and, by sterilizing the air, perhaps might lessen the incidence of respiratory infections among employees. I realize that no disinfectant can prevent droplet infection, such as would come from a cough or sneeze, but if decreasing the number of bacteria in office air is at all practicable (without rendering the air irritating or odorous) it should be valuable. Can you give me any information or refer me to the proper authority? Ultraviolet generators would not do.**

D. G. Ornston, M.D., Philadelphia.

ANSWER.—The studies on air sterilization with glycol vapors, and in particular propylene glycol, which are being carried on by O. H. Robertson and his associates at the University of Chicago have not yet reached the point where practical application can be advocated. These workers feel that definite information concerning any possible deleterious effect on the lungs resulting from prolonged inhalation of propylene glycol vapor must be obtained in appropriate animals before exposing human beings to such atmospheres. Observations on long term animal toxicity tests of this nature in both rats and monkeys have been under way for many months. Furthermore, certain problems concerning the best means and most suitable apparatus for distributing glycol vapors are not yet solved. While introduction of propylene glycol vapor into an air conditioning system of a building would seem to promise a simple means of distributing this vapor, little information is yet available concerning the possibility of obtaining adequate concentrations of the vapor in all parts of an enclosed air space. Such questions as to how much of it would be absorbed on various kinds of surfaces, the effect of dust, and the like need to be elucidated. Preliminary reports on this work by the authors mentioned may be found in the *Journal of Experimental Medicine* (**75**:593 [June] 1942) and *Science* (**94**:612 [Dec. 26] 1941).

VIABILITY OF KIDNEY AFTER URETERAL OBSTRUCTION

To the Editor:—**Will you kindly give me an opinion as to the length of time a kidney may remain viable and retain its normal function, when its ureter has been completely blocked by an impacted calculus, producing complete anuria on the affected side, if the calculus is removed surgically? I do not have reference to complete blockage, resulting in acute fulminating symptoms, since it is fully understood that such a condition demands immediate surgical intervention, but rather to complete blockage, with resultant anuria, without constitutional symptoms. This complete blockage was proved by numerous cystoscopies and no excretion of urine was found to exist. Methylene blue was injected and the catheter left in the ureter for over an hour on several occasions, so there is no possibility of error having been made. The injection of the dye was intravenous.**

John E. Hall, M.D., Miami, Fla.

ANSWER.—The duration of viability of the human kidney following complete ureteral obstruction is not known with certainty, but from clinical experience and experimental evidence available such kidneys are capable of a return of function even after several weeks of complete ureteral occlusion. In some cases with ureteral obstruction a diagnosis of functionless kidney is made because of failure of renal visualization in the excretory urogram and the absence of dye in chromocystoscopy from the affected kidney. Such cases have been observed in which visualization was absent over a period of several months, and, when renal drainage was reestablished, renal function returned to normal within a short time. However, failure of urographic visualization is not necessarily an indication of complete anuria, since in many cases of this type cystoscopic inspection of the ureteral orifices may reveal spurts of a pale, water-like urine which has a low specific gravity and may contain no dye following chromocystoscopy. Such secretion would indicate a limited activity of the kidney. Moreover, in most of these cases of partial occlusion intermittent symptoms of dull pain are present, which would also indicate persisting renal function. After the obstruction has been removed the kidney often returns to normal, even after months of partial occlusion. Partial renal occlusion, however, is quite different from the case cited in this query, in which there is complete absence of any renal secretion, apparently over a period of several weeks, and without any constitutional symptoms. This type of case is not frequently reported but undoubtedly is not of rare occurrence.

The experimental evidence available suggests that the duration of complete ureteral obstruction required for total destruction of the kidney depends to some extent on the size and consistency of the animal's kidney. Approximately forty days is required for complete destruction of the kidney in the rat and eighty-four days in the rabbit. Working with dogs, Caulk and Fischer found that after complete ligation of the ureter the kidney was severely damaged at the end of two weeks. Joelson, Beck and Moritz however found that, if the dog's ureter was completely ligated for periods of from twelve to nineteen days, renal function could be restored in from forty to seventy days by reimplantation of the ureter or by nephrostomy. It would be logical to assume that if a ureter was completely ligated the renal function would be so completely destroyed at the end of a month that ureteral reimplantation or renal drainage would permit little recuperative power. It is possible, however, that under favorable circumstances the human kidney may have somewhat greater recuperative power.

Another factor which exercises an influence on the time interval required for destruction of the kidney is the level of interpelvic pressure present after ureteral occlusion. It has been shown experimentally that immediately following complete ureteral occlusion the intrapelvic pressure rises to 75 or 100 mm. of mercury pressure, which, after a period of several hours, falls to a much lower level. This is due both to diminished renal excretion and to reabsorption of the urine. Since the high initial pelvic pressure, or the force serving to dilate the kidney, is present for only a short while, it is perhaps easily understood why complete ureteral obstruction over a period of several weeks might be required for destruction of the kidney. Furthermore, despite complete ureteral obstruction, some degree of renal excretion and reabsorption is continuously taking place and it therefore hardly seems correct to assume that the renal function has been held in complete abeyance all this while.

Clinical and experimental evidence would lead one to believe that in case of carefully proved complete absence of urinary secretion resulting from obstruction continued over a period of a month or longer, and in the absence of recent pain or constitutional symptoms, the affected kidney has been so severely damaged that removal of the stone and reestablishment of renal

drainage will not restore renal function. It would seem probable that in the case cited the affected kidney has suffered irreparable damage and is largely, if not completely, destroyed. In fact, in the absence of urgent clinical data, surgical intervention is hardly indicated.

References:

Caulk, John R., and Fischer, R. F.: An Experimental Study of Ureteral Ligation, *Tr., Am. A. Gen.-Urin. Surgeons*, **12**: 165, 1919.
Joelson, James J.; Beck, Claude S., and Moritz, Alan R.: Renal Counterbalance, *Arch. Surg.* **19**: 673 (Oct.) 1929.

ITCHING FROM BURNS IN BOY AGED FOUR

To the Editor:—**A 4 year old boy is now convalescing from a rather extensive burn of his chest and back. Although he is up and around and his wounds are completely healed, he is subject to periodic recurrences of intractable itching of the scarred areas which initiate a sudden wild frenzy of scratching, thumping his chest and back, accompanied by crying and screaming. Could you advise me of any local application which could be used for a long period and yield a satisfactory analgesic effect locally, without any systemic sedation or toxic effects?** **Leo Dobrin, M.D., New York.**

ANSWER.—It is quite possible that what this patient actually needs is a skin grafting procedure. However, further details would be of help in answering this question. These involve especially the type of original burn treatment, how large a granulating surface resulted, if any, and the time which has elapsed since the original burn and since the healing of the granulating wound, if any. If a large granulating wound was produced by the burn (which would therefore have been a third degree injury) the resultant scar tissue is entirely different from that which follows a first or second degree burn. This scar tissue is prone to break down, to cause contractures, and —what is especially apropos to the patient under discussion—to not keep up in rate of growth with the surrounding more normal tissues of a boy of 4 years. It has been shown (Brown, J. B.: Covering of Raw Surfaces, *Internat. Abstr. Surg.* **67**:105, 1938, in *Surg., Gynec. & Obst.*, Aug. 1938), that the scar base following a third degree burn is composed of flat epithelium without hair, glands or papillae. Because of lack of supporting rootlike action of the normal papillae, such skin is readily stripped up in sheets as the result of relatively mild trauma.

The most successful method of treating such scar tissue is by means of skin grafting. Since it is extremely difficult to obtain satisfactory thick split grafts of sufficient size taken with a razor or Blair-Brown knife from a 4 year old child, dermatome grafts usually give the most satisfactory result. Before applying the grafts, the entire scar should be excised and the graft applied to the normal tissue beneath. This advice is given on the premise that a third degree burn existed. The technic of applying dermatome grafts is described by Padgett (Skin Grafting, Springfield, Ill., Charles C Thomas, 1942).

In case the burn was not third degree, skin grafting would not be indicated. The use of daily applications of cocoa butter or of anhydrous wool fat should be tried. This may be continued for some time while medicated remedies (e. g. calamine lotion with phenol) should be used for only a few weeks at a time and should not be placed under occlusive dressing.

Calamine lotion with phenol alternated with plain olive oil or with calamine liniment (N. F.) may be useful as an antipruritic:

℞ Calamine	Gm. or Cc.
Zinc oxide	of each 15
Glycerin	
Sodium biborate	of each 8
Phenol	2
Solution of calcium hydroxide	to make 240

INFANT FEEDING DURING EARLY HOURS OF LIFE

To the Editor:—**Will you give me the current opinion regarding the following: When using artificial feeding for the newborn, which method prevails, (*a*) sterile water and Karo for the first twenty-four to forty-eight hours, (*b*) small feedings of formula and (*c*) use of laxatives?** **R. F. DeWitt, M.D., Plymouth, N. H.**

ANSWER.—At one large hospital newborn infants do not receive any food other than sterile water and the breast during the first seventy-two hours. No laxatives are prescribed. The objective in omitting feedings is to create a desire for food on the part of the infant which will lead him to stimulate the mother's breast. Six hours after birth the infant is placed to the breast for the first time and thereafter at four hour intervals, five times daily.

DANGERS OF SULFUR DIOXIDE TO REFRIGERATOR WORKER

To the Editor:—**One of my patients is a refrigerator service man, and in the course of his work he frequently brings his hands into contact with sulfur dioxide. This chemical stains and irritates his hands and causes him a great deal of discomfort. Will you be kind enough to advise me what chemical he may use with safety to neutralize the irritant after exposure? He has tried wearing protective gloves but finds that they interfere with the manipulation of his fingers.** **J. Joseph Klar, M.D., Springfield, Mass.**

ANSWER.—The chief danger to refrigerator workers from sulfur dioxide is from freezing. A needle sized jet from a leak will freeze an eyeball immediately. Chilling of other portions of the body from contact with liquid sulfur dioxide is rapid but less significant than eye freezing. Much sulfur dioxide as used in refrigerators is dissolved in oil. This practice diminishes the prospect of injury to workers. Ordinarily sulfur dioxide does not stain in the ordinary sense but instead bleaches, as is well known from its wide use in bleaching dried fruits. If actual staining occurs, this is more likely to be associated with grime from contact with oil. It is well established that sulfur dioxide is a hygroscopic agent leading to skin desiccation from the extraction of water, which eventuates in the formation of an acid. No chemical application can be expected to overcome chilling from sulfur dioxide, but irritation may be prevented by the application, before and during the course of work, of a small amount of any tenacious substance such as hydrous wool fat, preferably with some mild alkali such as sodium bicarbonate. The quantity required, two or three times daily as rubbed on the skin of the hands, is so slight as not to interfere with work and not to be unsightly. It is not sufficient to use such protection only after exposure, as implied in the query. Benefit will arise chiefly by preventing contact between the skin and the sulfur dioxide.

UNUSUAL REACTION TO MECHOLYL CHLORIDE

To the Editor:—**Recent literature dealing with the toxicity of the glycols prompts the following case history: A woman aged 45 suffered urinary retention for approximately six weeks following cystoscopy performed for diagnosis and treatment of a leftsided pyelitis of mild degree. When all usual attempts to relieve the retention failed and the patient was leading a catheter life with no signs or symptoms of genitourinary disease, a neurologic consultation was obtained. The ultimatum was that psychogenic factors alone caused the condition. It was suggested that mecholyl chloride be administered hypodermically in doses of 25 mg. each. The patient had a course of twelve injections. The drug was packaged as a dry powder in an individual ampule, to be dissolved in distilled water. Before each injection the blood pressure cuff was attached and the patient made comfortable in bed. A hypodermic containing atropine sulfate 1/100 grain (0.00065 Gm.) was kept in readiness. The initial arterial tension was 145 systolic, 85 diastolic and within two minutes of administration of the mecholyl, in each of the twelve doses, the systolic pressure began to fall. Concomitantly the patient complained of a "flush," of a musty unpleasant odor and of profound perspiration. The pressure reached its lowest point in approximately eight minutes, averaging 95 systolic and 70 diastolic. After this it slowly climbed until in fifteen to twenty minutes from the start it attained its original level. Aside from the drenching sweat there was no aftermath in any instance. After the second injection the patient voided urine spontaneously before retiring, making catheterization necessary only in the morning. This situation obtained for the rest of the course. The third purchase of mecholyl consisted of 25 mg. in each ampule, but it was already dissolved in propylene glycol. The usual precautions were taken, and the substance was injected hypodermically. In about one minute the patient complained that she felt warmer than usual. In another minute I noted that the systolic pressure began to rise, and the pulse, which previously had remained fairly constant throughout the effect, also increased. When sweating failed to appear, I realized that a different reaction was in progress. When the systolic pressure reached 210 and the pulse 130 (in the fifth or sixth minute) the patient had a generalized tonic convulsion. She had not made a sound since complaining of the flush but simply lapsed into a coma. The pupils could not be examined because the eyes were rolled upward and rigidly fixed in that position. The fingers of the clenched fists could not be pried open, the forearms could not be extended, nor could the lower limbs be moved in any manner. Respiration was about 18 to 20 per minute and shallow. I administered 1/50 grain (0.0013 Gm.) of atropine, followed in two minutes by a similar dose. The peak of blood pressure (250/140) and pulse (something over 150) came just prior to the second injection of atropine and about twenty minutes after the mecholyl. Gradually the signs abated. In about forty-five minutes the extremities could be moved with some difficulty, and in another fifteen minutes the patient stirred voluntarily and made a grimace of pain. In a half hour she could answer questions but indicated that every effort gave bodily pain, in particular a severe frontal headache. It took two days for the last of the symptoms to subside and the arterial tension and pulse to reach their former level. Total retention again set in and, on the day of writing (five days after injection) has not been relieved.** **Louis Spitz Jr., M.D., Philadelphia.**